FIFTH FIVE-YEAR REVIEW REPORT
FOR
SIKES DISPOSAL PITS SUPERFUND SITE
HARRIS COUNTY, TEXAS

July 2016

Prepared by

U.S. Environmental Protection Agency
Region 6
Dallas, Texas

FIFTH FIVE-YEAR REVIEW REPORT
SIKES DISPOSAL PITS SUPERFUND SITE
EPA ID NO. TXD980513956
HARRIS COUNTY, TEXAS

This memorandum documents the U.S. Environmental Protection Agency's (EPA's) performance, determinations, and approval of the Sikes Disposal Pits Superfund Site (Site or site) fifth five-year review (FYR) under Section 121(e) of the Comprehensive Environmental Response, Compensation, and Liability Act, Title 42 U.S. Code, Section 9621(c), as provided in the attached Fifth FYR Report.

Summary of the Fifth Five-Year Review Report

The site remedial actions included excavation of contaminated soil and sludge, on-site incineration of excavated soil and sludge, and on-site disposal of residue ash from the incineration. Contaminated surface water was collected and treated on-site. Institutional controls were put in place to prevent the use of contaminated groundwater while it naturally attenuates to within the 10^{-5} Human Health Criteria (HHC) that was established by the Record of Decision (ROD). The Site is in the Operations and Maintenance (O&M) phase, and the O&M is being conducted by the Texas Commission on Environmental Quality (TCEQ). This Fifth FYR Report includes a review of relevant decision documents, implementation documents, remedy performance documents, groundwater monitoring reports, and legal documents, and focuses on the data obtained during routine groundwater sampling and gauging. Further evaluation and assessment of site-specific information and sampling data are needed.

Human Exposure Status: Under Control
Contaminated Groundwater Status: Under Control

Actions Needed

The following actions must be taken for the remedy to be protective over the long term:

- Conduct an assessment of the Maximum Contaminant Levels (MCLs) and the Human Health Criteria (HHC), and update the action levels as appropriate. Ensure that the laboratory detection limits are lower than updated cleanup levels.

- Perform the five-year sampling event to reassess indicator parameters per the O&M Plan (Shaw 2012b).

- Between each sampling event conducted at the Site, perform the data evaluation as described in the O&M Plan (Shaw 2012b), and include results of the evaluation in the annual reports. Evaluate data trends to adjust sampling frequency as appropriate, upon discussion and approval of the EPA and reevaluate attenuation timeframes.

- Conduct an assessment of detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life.

- Assess the need for sediment sampling, and if appropriate establish data quality objectives for sediment at the Site.

- Remove the fallen tree from the fenced enclosure for well GW-31 and repair the fence.

Determination

I have determined that the remedy for the Sikes Disposal Pits Superfund Site is protective of human health and the environment in the short-term and will be protective in the long-term if recommendations listed above are implemented.

Pam Phillips, Acting — 9/19/14

Carl E. Edlund, P.E. — Date
Director, Superfund Division
U.S. Environmental Protection Agency Region 6

CONCURRENCES

FIFTH FIVE-YEAR REVIEW REPORT
SIKES DISPOSAL PITS SUPERFUND SITE
EPA ID NO. TXD980513956
HARRIS COUNTY, TEXAS

Raji Josiam
Remedial Project Manager

7-19-16
Date

Carlos A. Sanchez
Chief, Texas/Arkansas Section

7/20/16
Date

John C. Meyer
Chief, Superfund Remedial Branch

7/20/16
Date

Anne Foster
Attorney, Office of Regional Counsel

8/25/16
Date

Mark A. Peycke
Chief, Superfund Branch, Office of Regional Counsel

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Date

Pamela Phillips
Deputy Director, Superfund Division

9/19/16
Date

ISSUES/RECOMMENDATIONS

FIFTH FIVE-YEAR REVIEW REPORT
SIKES DISPOSAL PITS SUPERFUND SITE
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Issues and Recommendations Identified in the Five-Year Review:

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: The 2012 Operation and Maintenance (O&M) Report (Shaw 2012b) states that action levels for contaminants of concern have been updated to reflect the lower value between the Maximum Contaminant Levels (MCLs) or Record of Decision specified Human Health Criteria (HHC). The exposure assumptions, toxicity data, and action levels used at the time of the remedy selection should be reassessed.			
	Recommendation: Conduct an assessment of the MCLs and the HHC, and update the action levels as appropriate. Ensure that the laboratory detection limits are lower than the updated cleanup levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: The O&M Plan contains provisions for semi-annual and annual sampling, in addition to a periodic reassessment of indicator parameters that is to take place "once every five years or whenever a statistically significant increase in the concentration of one or more indicator parameters has occurred" (Shaw 2012b). Semi-annual and annual sampling was conducted during the current review period as described in the O&M Plan (with the exception of a semi-annual event in 2012). However, during the Fourth five-year review (FYR) period and during the current FYR period, the reassessment of indicator parameters did not take place.			
	Recommendation: Perform the five-year sampling event to reassess indicator parameters per the O&M Plan (Shaw 2012b).			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: In addition to sampling frequency, the O&M Plan states that a data evaluation should take place between each sampling event, and states that "the purpose of the data evaluation is to determine the quality of groundwater beneath the site and to determine whether or not a statistically significant change has occurred in the groundwater since the last sampling event" (Shaw 2012b). The results of the statistical evaluation are to be reported in each Annual Report. During the current and Fourth FYR period, no statistical analysis has been conducted between sampling events conducted at the Site.			
	Recommendation: Between each sampling event conducted at the Site, perform the data evaluation as described in the O&M Plan (Shaw 2012b), and include results of the evaluation in the annual reports. Evaluate data trends to adjust sampling frequency as appropriate, upon discussion and approval of the EPA, and reevaluate attenuation timeframes.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: The Fourth FYR recommended that an assessment of the detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life be conducted and also stated that data quality objectives for sediment should be set. There was no record of this assessment in the documents reviewed for the current FYR period.			
	Recommendation: Conduct an assessment of the detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Monitoring			
	Issue: The Fourth FYR stated that the appropriate criteria for setting appropriate data quality objectives and the evaluation of results of surface water and sediment samples is to be determined. The O&M plan (Shaw 2012) included surface water sampling. Based upon review of groundwater monitoring reports and other documents, it did not appear that sediment samples were collected during the review period or the data quality objectives were set for the sediment.			
	Recommendation: Assess the need for sediment sampling and if appropriate establish data quality objectives for sediment at the Site.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Operations and Maintenance			
	Issue: A tree was observed to have fallen on the fence for the well enclosure around GW-31 and a cross section support bar to the fence was disconnected.			
	Recommendation: Remove the fallen tree from the fenced enclosure for well GW-31 and repair the fence.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or relevant and appropriate requirement
COC	Contaminant of concern
DQO	Data quality objectives
EPA	U.S. Environmental Protection Agency
EPS	East pond (surface water sample location name)
FS	Feasibility study
FSP	Field Sampling Plan
FYR	Five-year review
HHC	Human Health Criteria
IC	Institutional control
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter
µg/L	Micrograms per liter
O&M	Operations and maintenance
ppm	Parts per million
RA	Remedial action
RAO	Remedial action objective
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
Site/site	Sikes Disposal Pits Superfund Site
TCEQ	Texas Commission on Environmental Quality
VOC	Volatile organic compound
WPS	West pond (surface water sample location name)

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I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act Section 121, consistent with the National Contingency Plan (40 Code of Federal Regulations Section 300.430[f][4][ii]), and considering EPA policy.

This is the Fifth FYR for the Sikes Disposal Pits Superfund Site (Site/site). The Record of Decision (ROD) was signed on September 18, 1986 (EPA 1986). The triggering action for this Policy/Pre-Superfund Amendments and Reauthorization Act (SARA) review is the completion date of the previous FYR. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

The Site consists of one (1) Operable Unit, which will be addressed in this FYR.

The Site FYR was led by Ms. Raji Josiam of the EPA, Remedial Project Manager for the Site. Mr. Lam Tran of the Texas Commission on Environmental Quality (TCEQ) assisted in the review as the representative for the support agency. The review began on 2/29/2016. References are included as Appendix A, and the Site Chronology is included in Appendix B. Appendix C includes a location map as Figure C-1, and a Site map as Figure C-2. Additional figures in Appendix C are discussed in Section IV.

Site Background

The Site is located on a 185-acre site approximately 2 miles southwest of Crosby, Harris County, Texas. The Site is bordered by U. S. Highway 90 on the south, the San Jacinto River and Love Marina on the west, and Jackson Bayou on the north (Appendix C, Figure C-1). Both Jackson Bayou and the San Jacinto River have designated beneficial uses for contact recreation and high aquatic life habitat by the TCEQ (Title 30 Texas Administrative Code [TAC] Chapter 307). In the past, the eastern portion of the Site was used by a honey farm to raise bees and harvest honey; this was not observed during the Site inspection. The Riverdale Subdivision is located approximately 500 feet southwest of the Site. An off-roading park (Down South Offroad Park) is located within the Site on the north end (Appendix C, Figure C-2). The only features remaining that are related to the remedy include groundwater monitoring wells and access roads. Individual security fencing with a locked gate secures each monitoring well. Since completion of the remedy, vegetation has become reestablished (see Section 6.6 for a discussion of the site inspection). The majority of the Site is vacant, except for the Love Marina at the western side of the Site (EPA 2011).

From about 1961 until 1967, the Site was operated as an illegal open dump. As a result, a wide variety of wastes, including drums and bulk wastes, were disposed on-site. The wastes were primarily chemical wastes, such as benzene, phenols, olefinic compounds, and other organic solvents, that most likely originated from petrochemical companies operating in the surrounding area. Approximately 2,000, 55-gallon drums of waste and an indeterminable amount of bulk loads were discovered to have been disposed at the Site. The drums were dumped along the sides of roads and bulldozed into pits and low mounds, while the bulk loads were dumped and/or pumped into pits and low-lying areas. Hydrocarbon

odors from the Site became such a nuisance that local residents at the time complained to both President Lyndon Johnson and Congress. Much of the wastes were deposited into what was known as the main waste pit, which was surrounded by a dike. This dike was breached by flooding, which resulted in the transporting of wastes across a large low-lying area east of the main waste pit known as the overflow area (EPA 2011).

The Site is frequently inundated by floodwaters from the San Jacinto River. Surface water at the site ultimately drains to either the San Jacinto River or Jackson Bayou. A shallow aquifer, located within alluvial sand deposits ranging from 17 to 34 feet thick, underlies the site. Groundwater in the shallow aquifer flows from the east and northeast towards the southwest across the site. The shallow aquifer discharges into several ponds located at the Love Marina at the southwest portion of the site. A deeper aquifer is located approximately 65 feet below the shallow aquifer. Separated from these two aquifers by several hundred feet of clay are the deeper Chicot and Evangeline aquifers. These two aquifers supply much of the water supply for metropolitan Houston (EPA 2011).

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Sikes Disposal Pits Superfund Site		
EPA ID: TXD 980513956		
Region: 6	**State:** TX	**City/County:** Crosby/Harris County

SITE STATUS	
National Priorities List Status: Final	
Multiple Operable Units (OUs)? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA ***(If "Other Federal Agency," enter Agency name)*:**
Author name (Federal or State Project Manager): Ms. Raji Josiam
Author affiliation: EPA Region 6
Review period: 2/29/2016 – 4/15/2016
Date of site inspection: 3/3/2016
Type of review: Policy/Pre-SARA
Review number: 5
Triggering action date: 9/28/2011
Due date *(five years after triggering action date)*: 9/28/2016

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The purpose of the response actions conducted at the Site was to protect public health and welfare and the environment from releases or threatened releases of hazardous substances from the site. The major threats posed by the Site were direct human contact with sludge and contaminated soils, continued direct contamination of the upper aquifer, potential contamination of the lower aquifer, direct contact with contaminated surface waters, and releases of toxic volatile organic compounds into the air through uncontrolled disturbances of the waste (EPA 2011). The major contaminants of concern identified included chemical wastes, such as benzene, phenols, olefinic compounds, and other organic solvents, that most likely originated from petrochemical operations (Table 2).

Response Actions

The Record of Decision (ROD) selecting the remedial action for the Site was signed on 9/18/1986 (EPA 1986). The remedial action objectives (RAOs) developed for the Site, along with their associated, ROD-based criteria, are shown in Table 1.

Table 1: Summary of Remedial Action Objectives and Applicable Criteria

Remedial Action Objective	ROD Criteria
Prevent human contact with contaminated soil and wastes	No direct contact with wastes containing greater than 100 parts per million (ppm) polynuclear aromatic hydrocarbons.
Minimize the impact of contaminated runoff	Surface Water Quality Criteria: 0.1 milligrams per liter (mg/L) benzene, 0.3 mg/L vinyl chloride, and 0.3 mg/L total phenols and metals, per Section 156.19.15.002 of the Texas Water Code.
Prevent human contact with contaminated surface water	Surface Water Quality Criteria: 0.1 mg/L benzene, 0.3 mg/L vinyl chloride, and 0.3 mg/L total phenols and metals, per Section 156.19.15.002 of the Texas Water Code.
Minimize site-related degradation of the San Jacinto River and Jackson Bayou	Surface Water Quality Criteria: 0.1 mg/L benzene, 0.3 mg/L vinyl chloride, and 0.3 mg/L total phenols and metals; per Section 156.19.15.002 of the Texas Water Code.
Prevent use of contaminated groundwater in the upper aquifer	Human Health Criteria (HHC)[1] and current drinking water standards for the currently monitored contaminants[2].
Protect against contamination of the lower aquifer	Existing background water quality in the lower aquifer.
Prevent migration of wastes offsite during flood events	Surface Water Quality Criteria: 0.1 mg/L benzene, 0.3 mg/L vinyl chloride, and 0.3 mg/L total phenols and metals, per Section 156.19.15.002 of the Texas Water Code.
Prevent use of groundwater (lower aquifer) contaminated above background	Existing background water quality in the lower aquifer.
Minimize the potential of any adverse air discharge	Federal Ambient Air Standards at the Site boundary.

Notes:
[1] – In the seventh revision of the O&M Plan, the contaminants of concern (COCs) values were compared to the lower value of the Maximum Contaminant Levels (MCLs) or ROD -specified HHCs (Shaw 2012b).
[2] – Monitored contaminants include beryllium, cadmium, total chromium, lead, mercury, nickel, thallium, methyl methacrylate (not listed in ROD, added in with the 2001 O&M Plan), styrene (not listed in ROD, added in with

the 2000 O&M Plan), benzene, chlorobenzene, chloroform, 1,2-dichloroethane, trans-1,2-dichloropropene, ethylbenzene, 1,1,2,2-tetrachloroethane, toluene, 1,1,2-trichloroethane, trichloroethene, and vinyl chloride.

Table 2 lists the currently monitored contaminants, along with list of lower value of MCLs or HHCs that the COCs values were compared to (CB&I 2015).

Table 2: Summary of HHCs and MCLs for Monitored Contaminants

Contaminant	ROD-Specified 10^{-5} HHC (micrograms per liter [µg/L])	Current MCL [1] (µg/L) (EPA 2011)	Lower Value of MCLs or HHCs (CB&I 2015) (µg/L)
Beryllium	**0.037**	4	0.037
Cadmium	10	**5**	5
Chromium (total)	**50**	100	50
Lead	50	**15**	15
Mercury	**0.14**	2	0.14
Nickel	**13.4**	--	13.4
Thallium	13	**2**	2
Methyl methacrylate[2]	**34,000**	--	34,000[3]
Styrene[4]	**100**	**100**	100
Benzene	6.6	**5**	5
Chlorobenzene	488	**100**	100
Chloroform	**1.9**	80	1.9
1,2-Dichloroethane	9.4	**5**	5
Trans-1,2-dichlorpropene	**87**	--	87
Ethylbenzene	1,400	**700**	700
1,1,2,2-Tetrachloroethane	**1.7**	--	1.7
Toluene	14,300	**1,000**	1,000
1,1,2-Trichloroethane	6	**5**	5
Trichloroethene	23	**5**	5
Vinyl Chloride	20	**2**	2

Notes:
The lower of the HHC or the MCL are bolded.

[1] - MCLs listed in the Fourth FYR Report were checked against current MCLs, and there have been no updates for listed contaminants as of 11/2015 (EPA 2015b).
[2] - Included in the O&M Plan in 6/2001, but was not initially listed in the ROD.
[3] - Listed in the 2015 Annual Report (CB&I 2015) as 34,000 milligrams per liter (mg/L); assumed to be a typo.
[4] - Included in the O&M Plan in 12/2000, but was not initially listed in the ROD

The major components of the selected remedy included (EPA 2011):

- Excavation of soil and sludge containing more than 10 ppm of volatile organic compounds;
- On-site incineration of excavated soil and sludge;
- On-site disposal of residue ash from incineration;
- Backfilling of pits and excavated areas;

- Flood protection during remedial action;
- Collection and treatment of contaminated surface water;
- Prevent use of contaminated groundwater (through institutional controls [ICs]) while it naturally attenuates (through natural flushing) and;
- Monitoring of the upper and lower aquifers.

Status of Implementation

The remedial action (RA) was structured in two Phases, Phase A and Phase B. Phase A began in 10/1990, and consisted of preparing the Site for remediation and construction of treatment facilities. RA activities included mobilization to the Site, construction of an expanded security fence and establishing 24-hour security, general improvements such as construction of access roads, marking known contaminated areas, construction of flood protection structures, installation and testing of the incinerator and water treatment plant, installation of the air monitoring network, and installation of an on-site laboratory. Phase A activities were completed 80 days ahead of schedule on 1/24/1992 (EPA 2011).

Phase B began immediately after completion of Phase A, and consisted of Site remediation and monitoring activities. A trial incineration was conducted in early 1992, and excavation and incineration activities were completed on 6/11/1994. A total of 496,253 tons of contaminated soil and sludge were excavated and remediated. Also, approximately 350 million gallons of contaminated water were treated as part of the dewatering and storm water treatment process. The air monitoring network detected no levels of contaminants of concern (COCs) leaving the Site during remediation. All the ash from the incinerator was determined to be acceptable for use as backfill at the Site. The final inspection was conducted and the Final Certificate of Completion was issued in 12/1995 (EPA 2011).

Institutional Control Summary Table

Table 3: Summary of Planned and/or Implemented Institutional Controls

Media, Engineered Controls, and Areas that Do Not Support Unlimited Use/Unrestricted Exposure Based on Current Conditions	ICs Called for in the Decision Documents[1]	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Property of Mr. Richard O. Sikes	Yes	Mr. Sikes'	Prohibits use of shallow groundwater within the parcel(s) without approval of TCEQ, or before contaminants of concern no longer exist	Deed Notice (9/25/2001)
Property of Mr. Jim Love	Yes	Mr. Love's	Same as above	Deed Notice (9/25/2001)
Property of Mr. M.W. McClendon	Yes	Mr. McClendon's	Same as above	Deed Notice (9/25/2001)
Property designated previously belonging to Mr. William N. Parker	Yes	Mr. Parker's	Same as above	Not required
Property designated previously belonging to Mr. Larry Anderson	Yes	Mr. Anderson's	Same as above	Not required

Notes:
IC = Institutional control.
[1] – These properties were not specifically named in the ROD; however, use of the Upper Aquifer was banned under "Institutional Considerations" in the description of the selected Remedial Alternative (EPA 1986).

The deed notices are included as Appendix D of this report. During the FYR, no activities were observed that violated institutional controls (ICs). On 10/5/2015, TCEQ sent a letter to EPA stating that deed notices were not necessary for the Parker or Anderson properties (TCEQ 2015). This was based on quarterly monitoring conducted at the Site between 4/2013 and 7/2014 that showed groundwater sampling results that TCEQ believed to indicate that "the groundwater below the [Parker and Anderson]… properties is safe to drink and institutional controls are not necessary at this time" (TCEQ 2015). EPA concurred with TCEQ's assessment regarding deed notices on the Parker and Anderson properties on 10/19/2015 (EPA 2015a).

Systems Operations/Operations and Maintenance

The TCEQ is currently responsible for O&M activities at the Site, which includes semi-annual and annual groundwater and surface water sampling, maintenance of the access roads (to take place several days before each groundwater monitoring event), emergency inspections following significant flooding events,

and inspection of Site security features (including warning signs). These activities are specified by the O&M Plan last revised in 2012 (Shaw 2012b). The 2012 O&M Plan is version eight, which is to be effective through 8/31/2016 (CB&I 2013). Semi-annual sampling is to take place for wells GW-28 and GW-30, and surface water samples are to be collected from each of two ponds (east pond [EPS] and west pond [WPS]). Semi-annual sampling is to take place during the second half of the fiscal year, which runs September to August. Annual sampling events consist of collecting samples from six shallow monitoring wells (GW-15, GW-18, GW-19, GW-25, GW-28, and GW-30), from two deep monitoring wells (GW-29 and MW-31), and surface water samples are to be collected from each of the two ponds. Annual sampling is to take place during the first half of the fiscal year.

In addition to the semi-annual and annual groundwater sampling described in the O&M Plan (Shaw 2012b), groundwater is to be collected from all Site wells (GW-07, GW-15, GW-18, GW-19, GW-21, GW-23, GW-25, GW-27, GW-28, GW-29, GW-30, GW-31, GW-32, GW-33, GW-34, and GW-35) and from each of the two ponds every five years. This event will replace the routine annual and semi-annual sampling performed during that year. According to the O&M Plan, the first five-year sampling event was to be performed by 2016 (Shaw 2012b).

The O&M Plan describes the groundwater sampling frequency and analytical parameters to be tested, sampling procedures, analytical testing requirements, and data evaluation. The O&M Plan states that the Site-Specific Health and Safety Plan is readily available during all O&M activities and is typically kept inside work vehicles (Shaw 2012b).

The O&M Plan also contains provisions for re-evaluating baseline conditions and analytical parameters. The plan states that to verify the data quality objectives (DQOs) of the project are being achieved, a periodic reassessment of the indicator parameters is required; this is to occur every five years (as described above) or whenever a statistically significant increase of one of the indicator parameters has occurred (Shaw 2012b). During the Fifth FYR, it did not appear from the monitoring reports that the five-year indicator parameter reassessment had been conducted or that statistical analysis of data trends had been performed; this was also the case during the Fourth FYR. As part of the Fifth FYR, a statistical analysis of select analyte-well pairs was conducted by the EPA subcontractor. No significant increase in any indicator parameters was found (See Section IV).

During the current review period, a total of 11 groundwater monitoring events took place between 8/2012 and 6/2015 for which reports were available as of the date of this FYR (note that one event was only for one well, GW-27, in 8/2014). One groundwater monitoring event took place in 11/2015, but the annual report for this work will not be prepared until after the date of this report. However, the data from the 11/2015 event is included in this review. During the review period, annual sampling according to the 2012 O&M Plan took place five times (8/2012, 12/2012, 12/2013, 12/2014, and 11/2015), and semi-annual sampling according to the 2012 O&M Plan took place three times (6/2013, 4/2014, and 6/2015). During the sampling events conducted in 4/2013, 2/2014, and 7/2014, groundwater samples were collected in support of data in order to determine if ICs were necessary for the Anderson and Parker properties (TCEQ 2015). In addition, wells SI-116 and INT-116 were sampled a number of times between 2013 and 2014. These wells are not included in the 2012 O&M Plan list of wells to be sampled, and it has since been determined that these wells are for the adjacent French Limited Superfund Site (FLTG 1995). It is unclear why these wells have been included in the groundwater monitoring program during the current review period. Surface water was collected from both EPS and WPS locations during all sampling events except for 2/2014 and 7/2014, and during the 8/2014 event where only one well was sampled.

Lastly, note that in the seventh revision of the O&M Plan, the COCs levels are being compared to the lower of the MCLs or ROD-specified HHCs (Shaw 2012b). See Table 1 and Table 2. EPA MCLs were

last updated in November 2015; values listed in Table 2 reflect current MCLs for listed COCs (EPA 2015b).

III. PROGRESS SINCE THE LAST REVIEW

Table 4: Protectiveness Determination/Statement from the 2011 Five-Year Review

OU No.	Protectiveness Determination	Protectiveness Statement
Sitewide	Protective	The remedy for the Sikes Disposal Pits Superfund Site is protective of human health and the environment in the short term, and will remain so provided the action items identified in this five-year review report are addressed.

Table 5: Status of Recommendation from the 2011 Five-Year Review

OU No.	Issue	Recommendations/ Follow-Up Actions	Party Responsible	Over-sight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Site-wide	Some monitor well locks are missing or corroded, and some warning signs are faded and outdated (carried over from the third five-year review).	Replace locks and signs as needed to protect the monitor wells. The access gates should be secured to prevent unauthorized access to wells. The fences and gates are required to restrict access and prevent damage to or tampering with the monitor wells, particularly in light of increased traffic potentially associated with off-road biking activities planned for the site.	TCEQ	EPA	2012	Ongoing	December 2012* * TCEQ indicated that all locks and signs were replaced by December 2012. During this site visit, a few locks and signs were further identified to be replaced. See below for recommenda-tion
Site-wide	Waste drums are currently stored inside the security fence at wells GW-28/GW-29 (carried over from the third five-year review).	Dispose any waste contained in the drums associated with sampling events, and implement a program for disposition in a timely manner of all wastes generated as part of sampling activities.	TCEQ	EPA	2012	Ongoing	Annual* *TCEQ indicated that the waste is disposed of once a year

OU No.	Issue	Recommendations/ Follow-Up Actions	Party Responsible	Over-sight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Site-wide	The O&M Plan, last updated in 2/2003, requires semi-annual sampling of 6 shallow wells and 2 deep wells. During the fourth five-year review period, only three sampling events were performed (12/2006, 6/2007, and 3/2011).	The sampling frequency specified by the O&M Plan should be implemented. Based on the apparently relative stability of the contaminant plume, a reduction in the frequency of monitoring for less-affected wells included in the semi-annual program could be considered, perhaps to annual for the next five-year review period. Due to detections of contaminants of concern above criteria, however, it is recommended that sampling of GW-28, GW-30, and the ponds continue at the semi-annual frequency. Statistical analysis of data trends should be considered to aid in setting the appropriate monitoring frequency and reevaluation of attenuation timeframes (ROD indicates a natural attenuation timeframe of less than 30 years). The wells not included in a revised semi-annual or annual program should be sampled at least once during the five-year review period, or if they are determined to no longer be needed, they should be properly abandoned. Also, the interim baseline event must be implemented as required in the O&M Plan, and the O&M Plan must be updated to document any changes in the monitoring program.	TCEQ	EPA	2012	Addressed in Next FYR	See below for issue in Fifth FYR.

OU No.	Issue	Recommendations / Follow-Up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Site-wide	Since the ROD was signed, MCLs have been established for several site contaminants that are lower than the human health criteria presented in the ROD (carried over from third five-year review).	The lower of the MCL or ROD specified human health criteria should be considered when determining when the groundwater at the site has achieved the remedial objective of protection of human health and restrictions on use of contaminated groundwater can be lifted.	TCEQ	EPA	2012	Addressed in Next FYR	See below for issue in Fifth FYR.

OU No.	Issue	Recommendations/ Follow-Up Actions	Party Responsible	Over-sight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Site-wide	Site-related contaminants of concern continue to be detected in site wells, and have been detected in the east and west ponds at the Love Marina, but no surface water criteria have been set for evaluating the risk of exposure, and no sediment data have been collected.	Continue to monitor contaminant concentrations in site wells and the two ponds, add procedures for sampling of the two ponds to the O&M Plan, and determine the appropriate criteria for setting appropriate data quality objectives and the evaluation of results of surface water and sediment samples. Also, perform an assessment of the detections of site contaminants above Texas surface water quality standards for the protection of human health and aquatic life.	TCEQ	EPA	2012	Addressed in Next FYR	See below for issue in Fifth FYR.

OU No.	Issue	Recommendations/ Follow-Up Actions	Party Responsible	Over-sight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Site-wide	Recent groundwater data for benzene and vinyl chloride from two shallow wells (GW-28 and GW-30)	Perform a preliminary vapor intrusion screening evaluation. The purpose of this	TCEQ	EPA	2012	Considered But Not Implemented	See below for explanation

	exceed EPA's vapor intrusion screening levels (EPA 2015b).	evaluation would be to assess the potential for migration of select volatile organic compounds (VOCs) from contaminated groundwater and potentially contaminated soil vapor into current and potential future overlying residential/industrial buildings, and to assess current and future risk to building occupants from potential vapor intrusion. To plan this evaluation, refer to the Interstate Technology & Regulatory Council (ITRC 2007) and the EPA Vapor Intrusion Guidance (EPA 2015aa) documents.					
Site-wide	Deed notices describing the site hazards are not in place for all properties within the boundary of the site (carried over from third five-year review).	Complete the filing of deed notices for the Parker and Anderson properties.	TCEQ	EPA	2012	Completed	10/19/2015

- Fourth FYR Recommendations / Follow-Up Actions: Some monitor well locks are missing or corroded, and some warning signs are faded and outdated (carried over from the Third FYR). TCEQ indicated that all locks and signs were replaced by December 2012. During this site visit, a few locks and signs were further identified to be replaced.

    - Fifth FYR Status
        - Warning signs around groundwater monitoring well enclosures should be replaced on wells GW-15, GW-18, GW-31, and GW-34.
        - Well casing locks should be replaced on wells GW-19 and GW-23.
        - Well identification should be replaced on wells GW-15 and GW-35.

- Fourth FYR Recommendations / Follow-Up Actions: Waste drums are currently stored inside the security fence at wells GW-28/GW-29 (carried over from the Third FYR)

- Fifth FYR Status
  - During the Site inspection, one drum was noted in this area and contained approximately 10 gallons of purge water. TCEQ stated that waste is disposed of once per year.

- Fourth FYR Recommendations / Follow-Up Actions: The O&M Plan, last updated in 2/2003, requires semi-annual sampling of 6 shallow wells and 2 deep wells. During the Fourth FYR period, only three sampling events were performed (12/2006, 6/2007, and 3/2011).

  - Fifth FYR Status
    - The O&M Plan was updated in 2012 (Shaw 2012b), and called for semi-annual, annual, and five-year sampling. Semi-annual sampling took place on 6/2013, 4/2014, and 6/2015; no semi-annual event took place in 2012, however. Annual sampling took place on 8/2012, 12/2012, 12/2013, 12/2014 and 11/2015, but the annual sampling event report for the 2015 event was not submitted as of the date of this report. Analytical results from the 11/2015 monitoring event were reviewed, however.
    - Statistical analysis of data trends was recommended under this Issue during the Fourth FYR. A statistical analysis took place during the Fifth FYR. See Section IV.
    - During the Fifth FYR, it did not appear from the monitoring reports that the five-year indicator parameter reassessment (interim baseline event, as recommended) had been conducted.

- Fourth FYR Recommendations / Follow-Up Actions: Since the ROD was signed, MCLs have been established for several site contaminants that are lower than the HHC presented in the ROD (carried over from Third FYR).

  - Fifth FYR Status
    - The COCs levels have been compared to the lower of the MCLs or ROD-specified HHCs (Shaw 2012b).
    - The ROD has not been amended in regard to action levels being based on the lower of the MCL or HHCs.

- Fourth FYR Recommendations / Follow-Up Actions: Site-related COCs continue to be detected in Site wells, and have been detected in the east and west ponds at the Love Marina, but no surface water criteria have been set for evaluating the risk of exposure, and no sediment data have been collected.

  - Fifth FYR Status
    - Surface water samples were collected at regular intervals during the current review period.

- As recommended, surface water collection procedures are outlined in the O&M Plan (Shaw 2012b). COCs have not been detected in the East or West pond samples taken during the current review period.
- It does not appear that sediment data have been collected.
- As recommended, an "assessment of the detections of site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life" (EPA 2011) has not been conducted during the current review period.

- Fourth FYR Recommendations / Follow-Up Actions: Recent groundwater data for benzene and vinyl chloride from two shallow wells (GW-28 and GW-30) exceed EPA's generic vapor intrusion screening levels.
  - Fifth FYR Status
    - During the Site inspection, TCEQ stated that a vapor assessment has not been conducted at the Site. There are no residential or industrial buildings at the site in the vicinity of these shallow wells and hence, vapor intrusion is not an issue at this time. If residential or industrial buildings are constructed in the area in the future, vapor intrusion in these buildings needs to be evaluated and addressed.

- Fourth FYR Recommendations / Follow-Up Actions: Deed notices describing the site hazards are not in place for all properties within the boundary of the Site (carried over from Third FYR).
  - Fifth FYR Status
    - As stated above, TCEQ sent a letter to EPA stating that deed notices were not necessary for the Parker or Anderson properties after review of the results of quarterly monitoring conducted at the Site between 4/2013 and 7/2014 (TCEQ 2015). EPA concurred with TCEQ's assessment regarding deed notices on the Parker and Anderson properties on 10/19/2015 (EPA 2015a).

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement, and Site Interview

A public notice was published on 2/24/2016 in the *Highlands/Crosby Star Courier* announcing the FYR at the Site. A copy of this news release is provided in Appendix E. The results of this review and the report will be made available at the Site information repository located at the Crosby Branch Library, 135 Hare Road, Crosby, Texas 77532 (Phone 281-328-3535).

During the FYR process, interview forms were sent to various parties with association to the Site to document any perceived problems or successes with the remedy that has been implemented to date:

- Mr. Lam Tran, Project Manager, TCEQ – Summarized below.
- Down South Offroad (Sikes New Property/Land Owner) – Survey not returned. Hard copy provided on 3/2/2016; inquiry emailed on 3/9/2016, 3/16/2016, and 3/24/2016.
- Business Manager for Down South Offroad – Survey not returned. Hard copy provided on 3/2/2016; inquiry emailed on 3/9/2016, 3/16/2016, and 3/24/2016.
- Love's Marina New Owner – Survey not returned. Hard copy provided on 3/2/2016. TCEQ inquiry made on 3/31/2016.
- Love's Marina Site Manager – Survey not returned. Hard copy provided on 3/2/2016. TCEQ inquiry made on 3/31/2016.
- Harris County Commissioner of Precinct 2 – Survey not returned. Sent via email on 2/23/2016.
- Harris County Precinct 2 Infrastructure Director – Survey not returned. Sent via email on 2/23/2016.
- Crosby Voluntary Fire Department Chief – Survey not returned. Sent via email on 2/23/2016.
- Former Sikes Property/Land Owner – Not available.
- Former Love's Marina Part-time Employee – Not available.

The result of the returned interview is summarized below and the full form is included in Appendix F.

On 3/3/2016, Mr. Lam Tran of TCEQ returned an interview form sent by the EPA subcontractor on 2/17/2016. Mr. Tran stated that TCEQ conducted all tasks recommended by the Fourth FYR, specifically, that groundwater and surface water monitoring were conducted in accordance with the updated O&M Plan (Shaw 2012b). Mr. Tran noted that ownership of Love's Marina had changed during the review period, and that the new owner has been cooperative during the review period. He also noted that a customer of Down South Offroad called TCEQ and asked for information regarding the Site; he additionally noted that the new owner of this business has occasionally asked TCEQ when groundwater contamination at the Site will be detected below action levels. No other information regarding these inquiries was listed in the interview form. Vandalism to the fence and gate surrounding well GW-19 was noted in 6/2013; the fence and gate were repaired in 7/2013 according to Mr. Tran. Lastly, Mr. Tran recommended that wells at the Site that are not being sampled on a semi-annual basis should be plugged

and abandoned, although a rationale was not stated. See Appendix F.

Data Review

This FYR consisted of a review of relevant documents including groundwater monitoring data (see below), the ROD (EPA 1986), the current O&M Plan (Shaw 2012b), and IC documentation. Applicable cleanup standards were also reviewed (EPA 2015b).

Data collected since the previous FYR includes groundwater and surface water sampling analytical results. The ROD specified HHCs for the groundwater that must be met before groundwater beneath at the Site can be used. Until these criteria are met, there is a ban on the use of groundwater from the shallow and deep aquifers. As discussed above the COC levels have been compared to the lower of the MCLs or ROD-specified HHCs (Table 2). Analytical results discussed below are therefore compared to either MCLs or HHCs for monitored COCs, depending on the lower of the two values. See Table 2.

The last FYR was completed 8/2011. Groundwater samples were obtained annually between 2012 and 2015. Groundwater and surface water data are summarized below.

Metals in Shallow Wells

During the current review period, beryllium continued to be the most commonly detected COC in shallow wells at the Site. The beryllium was detected above the action level (HHC) of 0.037 µg/L a total of 14 times in wells GW-15, GW-18, GW-19, GW-23, GW-27, GW-28, and GW-30. The highest concentration detected during this FYR period was 6.23 µg/L in GW-27 during the July 14, 2014 sampling event. However, note that except for the 3/2011 groundwater monitoring event, the laboratory detection limit was above the beryllium action level for every sampling event during the current review period. Lead was detected above the action level (MCL) of 15 µg/L one time each in wells GW-23 and GW-34, and nickel was detected above the action level (HHC) of 13.4 µg/L 10 times in wells GW-15, GW-18, and GW-27. Concentration trends for beryllium, lead, and nickel are shown in Appendix C, Figure C-3 through Figure C-5, respectively. Note that for non-detect results, a concentration of one-half the detection limit was used as the data point for graphing purposes.

Metals in Deep Wells

During the current review period, no metals were detected above their action levels in any of the deep wells at the Site.

Volatile Organic Compounds (VOCs) in Shallow Wells

Well GW-30 was sampled eight times between 8/2012 and 11/2015. Benzene was detected above its 5 µg/L action level a total of seven times in this well during the current review period. Vinyl chloride was detected in this well above its 2 µg/L action level during every monitoring event. The only other well with VOC detections above action levels was well GW-28, with one detection each of benzene and vinyl chloride during the 8/2012 groundwater monitoring event. The action levels for both benzene and vinyl chloride are their MCLs. Concentration trends for benzene and vinyl chloride are shown in Appendix C, Figure C-6 and Figure C-7, respectively.

VOCs in Deep Wells

During the current review period, no VOCs were detected above their action levels in any of the deep wells at the Site.

Metals and VOCs in Surface Water

No metals or VOCs were detected above their action levels in either the East Pond or West Pond during the current review period. The vast majority of samples collected from these locations were below laboratory detection limits. However, chromium was detected at a concentration of 20 µg/L (HHC action level is 50 µg/L) in the East Pond during the 6/2015 groundwater monitoring event; however, it was not detected above the laboratory detection limit in the other eight samples collected during the review period. No other detected concentrations of note occurred in surface water samples collected during the review period.

Concentration Trend Analysis

The EPA subcontractor conducted a Mann-Kendall analysis for temporal trend (Gilbert 1987) for select analyte-well pairs with 4 or more samples and at least 1 detected concentration for data available from 12/2006 to 11/2015. Due to variations in method detection limits, all concentrations reported below the highest reported detection limit of the non-detect results were treated as ties for the Mann-Kendall test. Exact two-sided probabilities for the null distribution of the Mann-Kendall test were obtained from Hollander and Wolfe (1973). The test was evaluated at the 95% significance level for data sets with at least 10 samples, or the 90% significance level for data sets with fewer than 10 samples. All analyte-well pairs evaluated had a frequency of detection of at least 33%. Decreasing trends were noted for beryllium in wells GW-15 and GW-18; for benzene in wells GW-28 and GW-30; for trichloroethylene in well GW-28; and for vinyl chloride in wells GW-28 and GW-30. All other analyte-well pairs showed no significant trend. Appendix G contains the summary statistics and trend results, along with time series plots for the selected analyte-well pairs.

Purge Water Disposal

According to the Field Sampling Plan (FSP) (ECS 2013), purge water generated during sampling events is to "be collected in 55-gallon drums for subsequent testing and disposal" (ECS 2013). Specific analytical testing requirements and discharge criteria for purge water are not contained in the FSP (ECS 2013) or O&M Plan (Shaw 2012b). In 2011, two 55-gallon drums were noted near well GW-28; one was stated to be full, and the other was one-third full. These were to be managed for disposal at a later date (Shaw 2011). In 2012, one 55-gallon drum was noted in the enclosure for well GW-28. This was disposed of as solid waste through a Bill of Lading (Shaw 2012a), and was therefore empty. It is not clear where the purge water or second drum from 2011 were disposed. The 2013 Annual Report included a Uniform *Hazardous* Waste Manifest for purge water disposal (CB&I 2013). No waste manifest for purge water was included in the 2014 Annual Report (CB&I 2014), and the 2015 Annual Report included a *Non-Hazardous* Waste Manifest for purge water disposal (CB&I 2015).

Site Inspection

The inspection of the Site was conducted on 3/2/2016. In attendance were Ms. Raji Josiam, EPA; Mr. Lam Tran, TCEQ; and Ms. April Ballweg, EA Engineering, Science, and Technology, Inc., PBC. The purpose of the inspection was to assess the protectiveness of the remedy. The Site Inspection

Checklist is included as Appendix H. Photographic documentation of the Site inspection is included as Appendix I.

The Site is under new ownership since the previous FYR. The new property owners have started a business identified as Down South Offroad (Photographs 27 and 28). This is an off-road motocross bike park with picnic areas and day camping type activities. During the Site visit, it appeared that various locations near monitoring wells appeared to have been used for the day camping and picnicking activities (Photographs 15 and 16). In addition, trash disposal barrels were staged throughout the property. The ROD does not specify any restrictions on land use, except for banning the use of groundwater in the upper aquifer on Site. However, the new property/business owner of Down South Offroad identified the desire to install a water supply well to allow for the rinsing of bikes after trail riding activities. This has not been explored with TCEQ or EPA, and this potential well installation is currently only in the preliminary stage.

Love Marina is under new ownership as determined during the Site visit (Photographs 45 and 47). Signage and property structures (Photographs 46 and 48) indicate activities at the marina include picnicking, fishing, swimming, boating, and camping.

The fence erected around the Site during the remedial action is mostly intact; however, the gate is showing more wear. All groundwater monitoring wells were checked during the Site inspection and appear to be in good condition with only minor maintenance items identified. Access is restricted to monitoring wells by individual perimeter fencing (see Photograph 2 as an example). The groundwater monitoring well fence gates were all found to be locked during Site visit. The well casing padlocks on GW-19 (Photograph 38) and GW-23 were missing or damaged beyond the point of use as observed during the Site visit. Warning signs are posted at most well locations (Photographs 2, 7, 6, 9, 17, 19, 22, 33, 37, 40, and 43), however, some were missing the yellow warning signs (Photographs 13, 30, and 31). In addition, some of the TCEQ phone number signs were faded or illegible (Photographs 3 and 13). The language on some Site signs is also outdated (citing Texas Natural Resource Conservation Commission instead of TCEQ; Photographs 6, 7, 29, and 40). Some well identifications were observed to be faded (Photograph 34 as example), while GW-35 was missing an identification completely due to heavy rusting of the well casing. One 55-gallon drum used for staging of purge water from sampling events was observed stored inside the fence at wells GW-28/GW-29 (Photographs 33, 35, and 36).

Vegetation around the monitor wells was observed to be under control (Photographs 2, 7, 9, 11, 13, 17, 19, 20, 33, 37, 40, and 43). Only wells GW-15/GW-31 (Photographs 29, 30, 31, and 32) had nearby vegetative growth at the fence line with a fallen tree observed leaning on the fence at GW-31. Site roads were in excellent condition (Photographs 1, 25, 26, and 45), except for the road to GW-15/GW-31, which requires 4-wheel drive to access the wells.

The honey farm beehives that previously lined the road heading northwest from wells SI-116/INT-116 (Photograph 49) were not observed during this FYR. In addition, Well-A/GW-5 (Photograph 50) was observed during the Site visit and based on historical research, it was determined to be part of the French Limited Superfund Site well field and not associated with the Site (FLTG 1995). See Appendix C, Figure C-2.

V. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

Based on the data review, the Site inspection, and the interviews, it appears that the remedy selected in the ROD is functioning as intended. All remedy components defined in the ROD are complete except for ongoing natural flushing of the shallow groundwater. O&M is occurring, however there are some items identified in the O&M plan that have not taken place in the last five years.

Remedial Action Performance

- Based on the data review, the Site inspection, and the interviews, it appears that the remedy selected in the ROD is functioning as intended. All remedy components defined in the ROD are complete except for ongoing natural flushing of the shallow groundwater.

- As a result of the statistical analysis performed, it was found that there are no wells that show statistically significant increases in monitored parameters where exceedances of action levels are found. In addition, with the exception of wells GW-28 and GW-30, no VOCs have been detected above action levels in the remainder of Site wells since 2006. The metals beryllium, lead, and nickel are more widespread than VOCs in Site wells; however, there are a number of wells (GW-7, GW-21, GW-25, GW-33, and GW-35) where no metals exceedances above action levels have been found since approximately 2006.

- Opportunities exist to reduce costs of monitoring at the Site through reduction in the frequency of sampling for wells where VOCs and/or metals have not historically been detected above action levels. In wells where sampling has ceased, plugging and abandonment could potentially reduce costs in maintaining access to the wells (i.e., less subcontractor time on Site).

System Operations/Operation and Maintenance

- Site O&M includes semi-annual and annual groundwater and surface water sampling, maintenance of the access roads, emergency inspections following significant flooding events, and inspection of Site security features. In addition, groundwater from all Site wells and one surface water sample from each of the two ponds is to be collected every five years for reassessment of indicator parameters (Shaw 2012b).

    - Site O&M activities (i.e., mowing and Site road work) took place in 10/2013, 7/2014, 12/2014, and 6/2015 (CB&I 2014, CB&I 2015). Semi-annual sampling took place on 6/2013, 4/2014, and 6/2015; no semi-annual event took place in 2012. Annual sampling took place on 8/2012, 12/2012, 12/2013, 12/2014 and 11/2015 (CB&I 2015).

    - It did not appear from review of collected data that the 5-year sampling event took place during the current review period, although during the 12/2013 sampling event, groundwater and surface water was collected from the prescribed wells and surface water locations for this event (with the exception of wells GW-32 and GW-33). However, there was no discussion of the 5-year sampling event in the 2014 Annual Report (CB&I 2014).

    - During every sampling event conducted during the current review period except in 3/2011, the beryllium laboratory detection limit reported was above the action level.

- The Fourth FYR recommended that an assessment of the detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life be conducted. There was no record of this assessment in the documents reviewed for the current FYR period. This assessment is still needed and should be completed.

- No discussion of an emergency inspection following a significant flooding event was found during the review of the Annual Reports.

- The O&M Plan also contains provisions for conducting a statistical analysis of collected data (Shaw 2012b).

  - A statistical analysis did not take place during the Fourth FYR; however, the EPA subcontractor performed a Mann-Kendall regression analysis on select analyte-well pairs as part of the current FYR. As stated above, no significant increase in any indicator parameters was identified. Rather, where a statistically significant trend was observed, the trend was a decreasing one (See Section IV and Appendix G).

  - It should be noted that the current O&M Plan calls for a data evaluation "to determine whether or not a statistically significant change has occurred in the groundwater since the last sampling event" (Shaw 2012b). No such evaluation was completed during the current review period.

Implementation of Institutional Controls and Other Measures

- ICs are in place (Appendix D) and are effective in preventing exposure.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy section still valid?

The exposure assumptions, toxicity data, and RAOs used at the time of the remedy selection may no longer be valid. The potential for VI should be evaluated and the cleanup levels selected in the ROD may need to be changed to reflect more stringent MCLs.

Changes in Standards and To Be Considered

- Applicable or relevant and appropriate requirements (ARARs) for this Site were identified in the ROD dated 9/18/1986 (EPA 1986). This FYR included identification and evaluation of changes in these ARARs to determine whether such changes may affect the protectiveness of the selected remedy. No changes that would call into question the effectiveness of the remedy have occurred since the signing of the ROD. The ARAR summary is provided in Appendix J.

Changes in Toxicity and Other Contaminant Characteristics

- None.

Changes in Risk Assessment Methods

- There have been no changes that bear on the protectiveness of the selected remedy.

Changes in Exposure Pathways

- Vapor Intrusion was identified as a possibility during the Fourth FYR and preliminary screening suggested a VI study is needed. During the Site inspection, TCEQ stated that a vapor assessment has not been conducted at the Site. There are no residential or industrial buildings at the site in the vicinity of these shallow wells, and hence, vapor intrusion is not an issue at this time. If residential or industrial buildings are constructed in the area in the future, vapor intrusion in these buildings needs to be evaluated and addressed.
- In addition, no sediment sampling has taken place in the two surface water ponds at the Site as recommended during the Fourth FYR. COCs have not been detected in the East or West pond samples taken during the current review period. Further assessment is needed to determine the need for sediment sampling.

Expected Progress towards Meeting RAOs

- Construction for the remedy was completed in 1995.
- Site RAOs are being met.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

- No other information has been identified that calls the protectiveness of the selected remedy into question.

VI. ISSUES/RECOMMENDATIONS

Issues and Recommendations Identified in the Five-Year Review:

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: The 2012 Operation and Maintenance (O&M) Report (Shaw 2012b) states that action levels for contaminants of concern have been updated to reflect the lower value between the Maximum Contaminant Levels (MCLs) or Record of Decision specified Human Health Criteria (HHC). The exposure assumptions, toxicity data, and action levels used at the time of the remedy selection should be assessed.			
	Recommendation: Conduct an assessment of the Maximum Contaminant Levels and the Human Health Criteria, and update the action levels as appropriate. Ensure that the laboratory detection limits are lower than the updated cleanup levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: The O&M Plan contains provisions for semi-annual and annual sampling, in addition to a periodic reassessment of indicator parameters that is to take place "once every five years or whenever a statistically significant increase in the concentration of one or more indicator parameters has occurred" (Shaw 2012b). Semi-annual and annual sampling was conducted during the current review period as described in the O&M Plan (with the exception of a semi-annual event in 2012). However, during the Fourth five-year review (FYR) period and during the current FYR period, the reassessment of indicator parameters did not take place.			
	Recommendation: Perform the five-year sampling event to reassess indicator parameters per the O&M Plan (Shaw 2012b).			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: In addition to sampling frequency, the O&M Plan states that a data evaluation should take place between each sampling event, and states that "the purpose of the data evaluation is to determine the quality of groundwater beneath the site and to determine whether or not a statistically significant change has occurred in the groundwater since the last sampling event" (Shaw 2012b). The results of the statistical evaluation are to be reported in each Annual Report. During the current and Fourth FYR period, no statistical analysis has been conducted between sampling events conducted at the Site.			
	Recommendation: Between each sampling event conducted at the Site, perform the data evaluation as described in the O&M Plan (Shaw 2012b), and include results of the evaluation in the annual reports. Evaluate data trends to adjust sampling frequency as appropriate, upon discussion and approval of the EPA, and reevaluate attenuation timeframes.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: The Fourth FYR recommended that an assessment of the detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life be conducted and also stated that data quality objectives for sediment should be set. There was no record of this assessment in the documents reviewed for the current FYR period.			
	Recommendation: Conduct an assessment of the detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Monitoring			
	Issue: The Fourth FYR stated that the appropriate criteria for setting appropriate data quality objectives and the evaluation of results of surface water and sediment samples is to be determined. The O&M plan (Shaw 2012) included surface water sampling. Based upon review of groundwater monitoring reports and other documents, it did not appear that sediment samples were collected during the review period or the data quality objectives were set for the sediment.			
	Recommendation: Assess the need for sediment sampling and if appropriate establish data quality objectives and action levels for sediment at the Site.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	5/1/2017

OU(s): Sitewide	Issue Category: Operations and Maintenance			
	Issue: A tree was observed to have fallen on the fence for the well enclosure around GW-31 and a cross section support bar to the fence was disconnected.			
	Recommendation: Remove the fallen tree from the fenced enclosure for well GW-31 and repair the fence.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	5/1/2017

OTHER FINDINGS

In addition, the following are recommendations that were identified during the FYR and may improve performance of the remedy, but do not affect current and/or future protectiveness:

- Warning signs around groundwater monitoring well enclosures should be replaced on wells GW-15, GW-18, GW-31, and GW-34.
- Well casing locks should be replaced on wells GW-19 and GW-23.
- Well identification should be replaced on wells GW-15 and GW-35.

- During the Site visit, the new property/business owner of Down South Offroad identified the desire to install a water supply well to allow for the rinsing of bikes after trail riding activities. This potential well installation is currently only in the preliminary stage and has not been formally explored with EPA or TCEQ. The ROD does not specify any restrictions on land use except for banning the use of groundwater in the upper aquifer on Site, therefore, an upper aquifer well may not be feasible.

- Groundwater from wells SI-116 and INT-116 was collected during 5 of the 12 sampling events conducted at the Site. These wells are part of the French Limited Superfund Site (FLTG 1995), and are not included in the Site well list as described in the O&M Plan (Shaw 2012b). For all future sampling events conducted at the Site, groundwater collection from wells S1-116 and INT-116 should be discontinued.

- Specific analytical testing requirements for disposal of purge water from groundwater sampling are not included in the FSP (ECS 2013) or O&M Plan (Shaw 2012b). Specific analytical testing requirements for purge water from groundwater sampling should be added to the FSP (ECS 2013) and/or O&M Plan (Shaw 2012b).

- Documentation of disposal of purge water from groundwater sampling during the current review period was inconsistent and incomplete. A consistent means to document the disposal of purge water from groundwater sampling should be determined, and this should be incorporated into the FSP (ECS 2013) and/or O&M Plan (Shaw 2012b).

- An opportunity exists to remove selected groundwater monitoring wells from the current monitoring program based on historical metals and VOC sample results below action levels in a number of Site wells. It should be determined if the removal of groundwater monitoring wells from the sampling program is appropriate, and if so, with EPA consensus, monitoring wells should be selected for removal and proper plugging and abandonment.

VII. PROTECTIVENESS STATEMENT

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: I have determined that the remedy for the Sikes Disposal Pits Superfund Site is protective of human health and the environment in the short-term and will be protective in the long-term if recommendations listed below are implemented: • Conduct an assessment of the MCLs and the HHC, and update the action levels as appropriate. Ensure that the laboratory detection limits are lower than the updated cleanup levels. • Perform the five-year sampling event to reassess indicator parameters per the O&M Plan (Shaw 2012b). • Between each sampling event conducted at the Site, perform the data evaluation as described in the O&M Plan (Shaw 2012b), and include results of the evaluation in the annual reports. Evaluate data trends to adjust sampling frequency as appropriate, upon discussion and approval of the EPA and reevaluate attenuation timeframes. • Conduct an assessment of the detections of Site contaminants above the Texas surface water quality standards for the protection of human health and aquatic life. • Assess the need for sediment sampling and if appropriate establish data quality objectives for sediment at the Site. • Remove the fallen tree from the fenced enclosure for well GW-31 and repair the fence.

VIII. NEXT REVIEW

The next FYR report for the Sikes Disposal Pits Superfund Site is required five years from the completion date of this review.

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APPENDIX A

REFERENCE LIST

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CB&I. 2013. *Annual Groundwater Monitoring Report, Fiscal Year 2013 (9/2012 – 8/2013), Sikes Disposal Pits Federal Superfund Site, Crosby, Harris County, Texas, Site Number SUP034*. 8/29.

CB&I. 2014. *Annual Groundwater Monitoring Report, Fiscal Year 2014 (9/2013 – 8/2014), Sikes Disposal Pits Federal Superfund Site, Crosby, Harris County, Texas, Site Number SUP034*. 8/28.

CB&I. 2015. *Annual Groundwater Monitoring Report, Fiscal Year 2015 (9/2014 – 8/2015), Sikes Disposal Pits Federal Superfund Site, Crosby, Harris County, Texas, Site Number SUP034*. 8/18.

Environmental Chemistry Services (ECS). 2013. *Field Sampling Plan for Operations and Maintenance Activities, Sikes Disposal Pits Federal Superfund Site, Crosby, Harris County, Texas*. Version 3.0. 6/21.

U.S. Environmental Protection Agency (EPA). 1986. *Record of Decision Remedial Alternative Selection: Sikes Disposal Pits Superfund Site, Crosby, Texas*. 9/18.

EPA. 2002. *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*. EPA530-D-02-004. 11/2002.

EPA. 2011. *Fourth Five-Year Review Report for the Sikes Disposal Pits Superfund Site, Crosby, Harris County, Texas*. 9/28.

EPA. 2015a. Electronic mail from Mr. Ruben Moya of the EPA to Mr. Lam Tran of TCEQ, regarding deed notices for the Parker and Anderson properties. 10/19.

EPA. 2015b. *Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1)*. 11/2015.

FLTG, Inc. (FLTG). 1995. *French Ltd. Project Monthly Progress Report, Submitted to U.S. Environmental Protection Agency-Region 6 and Texas Natural Resource Conservation Commission*. 12/1995.

Gilbert, R.O. (Gilbert). 1987. *Statistical Methods for Environmental Pollution Monitoring.* New York: Van Nostrand Reinhold.

Hollander, M., and D. A. Wolfe (Hollander and Wolfe). 1973. *Nonparametric Statistical Methods*. Wiley, New York.

Interstate Technology and Regulatory Council (ITRC). 2007. *Vapor Intrusion Pathway: A Practical Guideline*. 1/2007.

Shaw Environmental, Inc. (Shaw). 2011. *Annual Groundwater Monitoring Report, Fiscal Year 2011 (9/2010 – 8/2011), Sikes Disposal Pits Federal Superfund Site, Crosby, Texas, LPST Number SUP034*. 4/21.

Shaw. 2012a. *Semi-Annual Groundwater Monitoring Report, Fiscal Year 2012 (9/2011 – 8/2012), Sikes Disposal Pits Federal Superfund Site, Crosby, Texas, Site Number SUP034*. 8/29.

Shaw. 2012b. *Operations and Maintenance Plan, Sikes Disposal Pits Superfund Site, Crosby, Texas, Site Number SUP034*. 10/2.

Texas Commission on Environmental Quality (TCEQ). 2015. Letter from Lam Tran, TCEQ Project Manager, to Ruben Moya, EPA Superfund Division, Region 6, Regarding *Fourth Five Year Review of Sikes Disposal Pits Federal Superfund Site – deed notices for the Parker and Anderson properties*. 10/5.

APPENDIX B

SITE CHRONOLOGY

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SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
Site used as open dump	1961–1967
U.S. Environmental Protection Agency (EPA) and Texas Water Development Board (TWDB) begin site assessments	1981
Site proposed to EPA's National Priorities List	10/1981
EPA and TWDB execute initial cooperative agreement making the TWDB the lead agency for the project	6/1982
Remedial investigation/feasibility study (RI/FS) performed	5/1983 – 6/1986
Site finalized on the National Priorities List	9/1983
Record of Decision (ROD) signed	9/18/1986
Remedial design (RD) completed	12/1988
Remedial action (RA) contract awarded to IT-Davy	4/1990
Notice to proceed issued for RA Phase	10/1990
RA Phase A completed, and Phase B begins	1/1992
Trial Burn of the incinerator conducted; State issues interim operating conditions to allow remediation to begin	4/1992
Trial Burn Report is approved and production operating conditions are issued	8/1992
Excavation of contaminated soils is completed	5/1994
Incineration completed	6/1994
Incineration demobilization is completed	8/1994
Final inspection conducted	4/1995
Final completion certificate issued	12/1995
Final Closeout Report issued by EPA	5/1997
First five-year review completed by EPA	4/1998
Second five-year review completed by EPA	9/2001
Continued semi-annual groundwater monitoring and well maintenance	10/1995 – present
Operations and Maintenance Plan prepared for the Site by Daniel B. Stephens and Associates, Inc.	2/2003
Third five-year review completed by EPA	9/2006
Semi-annual groundwater sampling event	12/2006
Semi-annual groundwater sampling event	6/2007, 7/2007
Semi-annual groundwater sampling event	3/2011
Annual groundwater sampling event	8/2012
Operations and Maintenance Plan, Revision VIII, prepared for the Site by Shaw Environmental, Inc.	10/2/2012
Annual groundwater sampling event	12/2012
Quarterly groundwater sampling event for Institutional Control (IC) data collection	4/2013
Semi-annual groundwater sampling event in addition to IC data collection	6/2013
Annual groundwater sampling event in addition to IC data collection	12/2013
Quarterly groundwater sampling event for IC data collection	2/2014
Semi-annual groundwater sampling event in addition to IC data collection	4/2014
Quarterly groundwater sampling event for IC data collection	7/2014
Well GW-27 re-sampled per direction of TCEQ	8/2014

Event	Date
Annual groundwater sampling event	12/2014
Semi-annual groundwater sampling event	6/2015
Texas Commission on Environmental Quality letter to EPA stating that ICs for groundwater beneath the Parker and Anderson properties are not believed to be necessary as a result of quarterly groundwater monitoring at the Site between 4/2013 and 7/2014	10/5/2015
Annual groundwater sampling event	11/2015
Submittal of the Fifth Five Year Report for the Site	4/2016

APPENDIX C

SITE FIGURES

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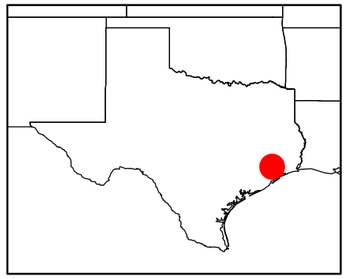
Legend

Site Boundary

Site Location



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Miles

Fifth Five-Year Review
Sikes Disposal Pits Federal Superfund Site
Crosby, Harris County, Texas

FIGURE NUMBER **C-1**

Location Map

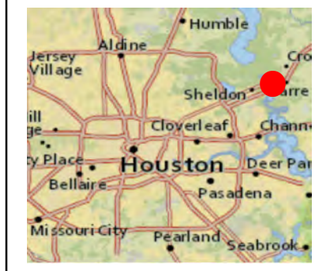
EA Engineering, Science, and Technology, Inc., PBC

Legend

- Surface Water Sample Location

Well Type

- Sikes Deep Well
- Sikes Shallow Well
- French Limited Monitoring Well
- Site Boundary



N

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Feet

Fifth Five-Year Review
Sikes Disposal Pits Federal Superfund Site
Crosby, Harris County, Texas

FIGURE NUMBER **C-2**

Site Map

EA Engineering, Science, and Technology, Inc., PBC

Figure C-3. Concentration Trends for Beryllium in the Shallow Aquifer

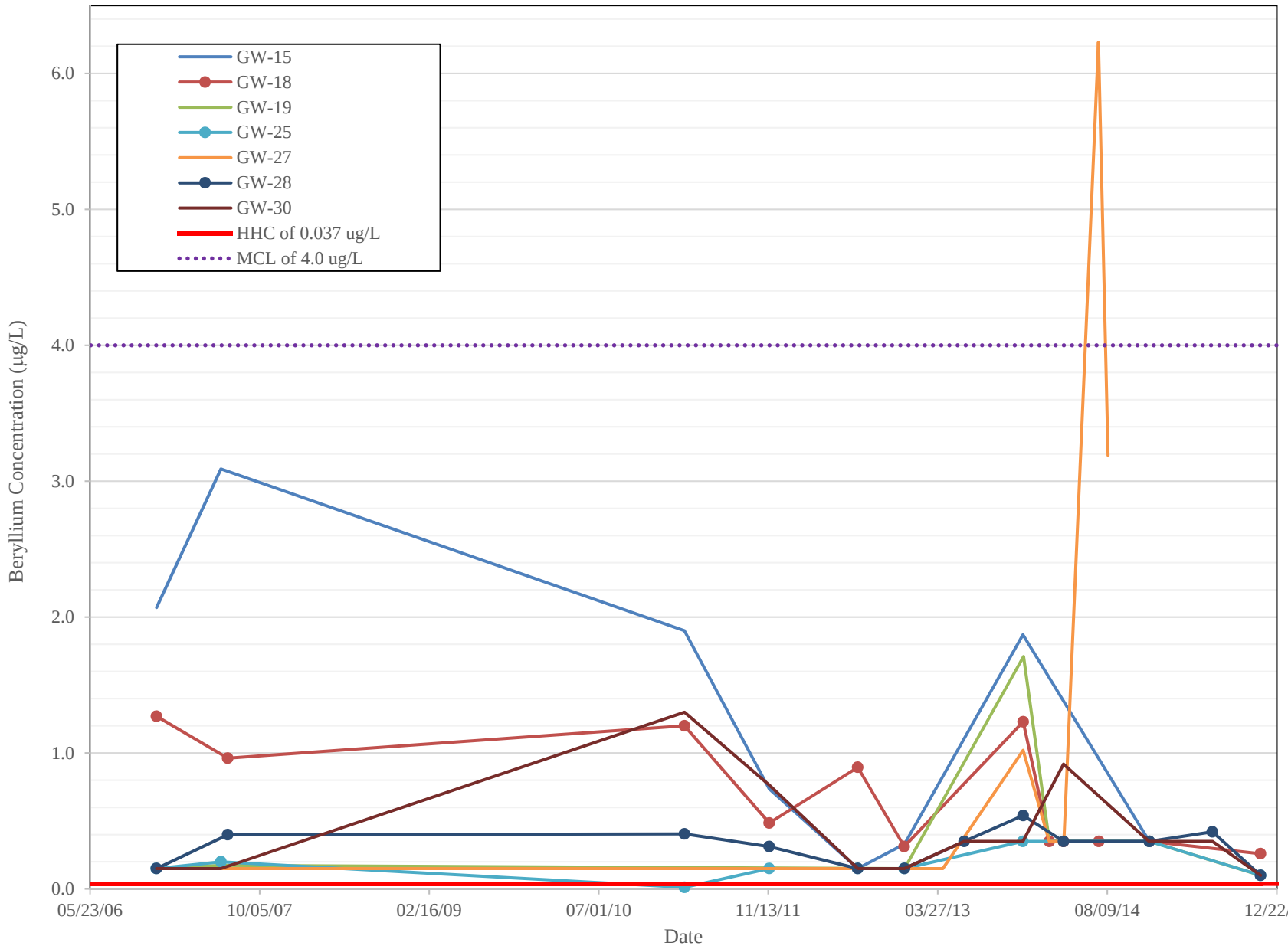


Figure C-4. Concentration Trends for Lead in the Shallow Aquifer

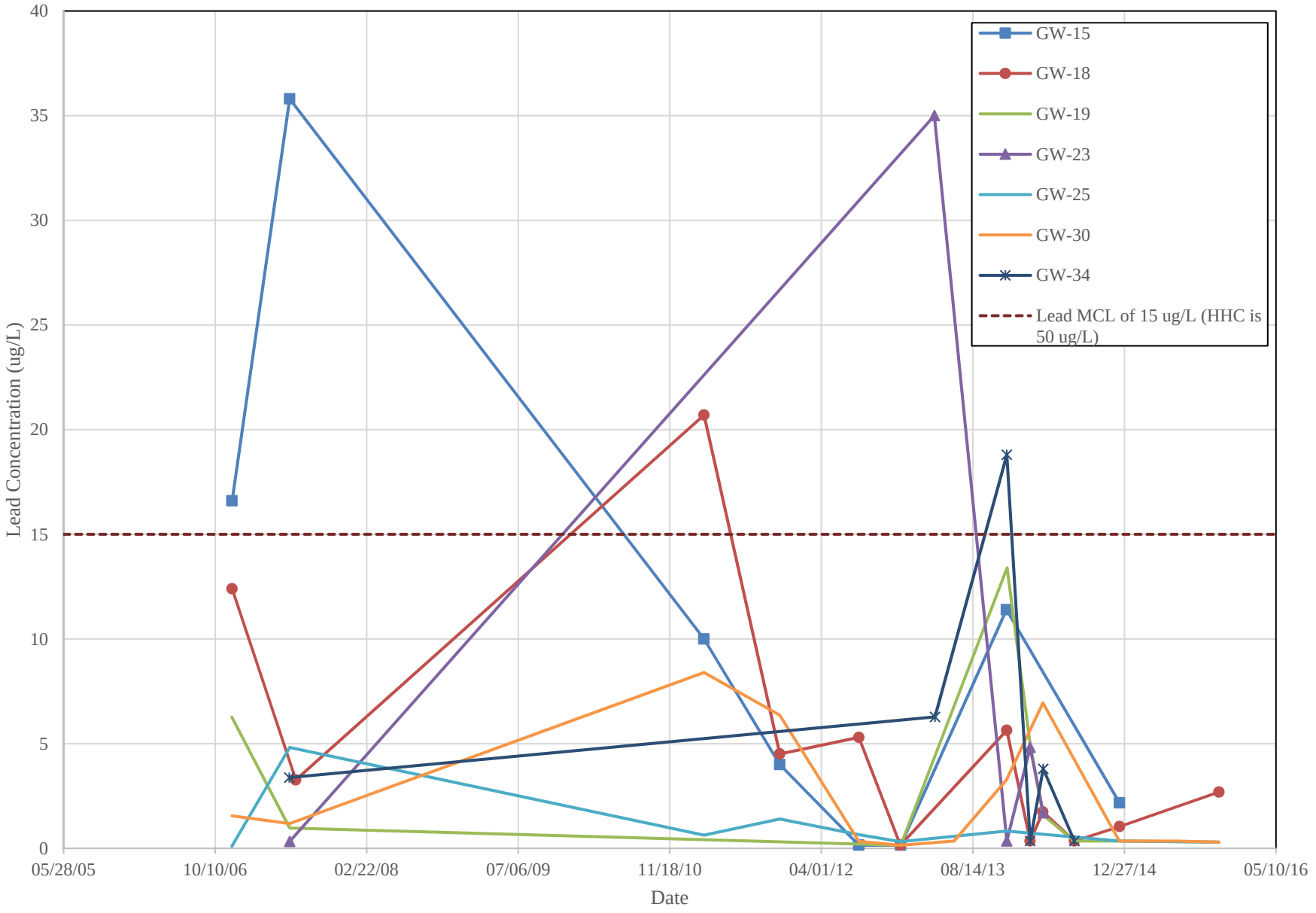


Figure C-5. Concentration Trends for Nickel in the Shallow Aquifer

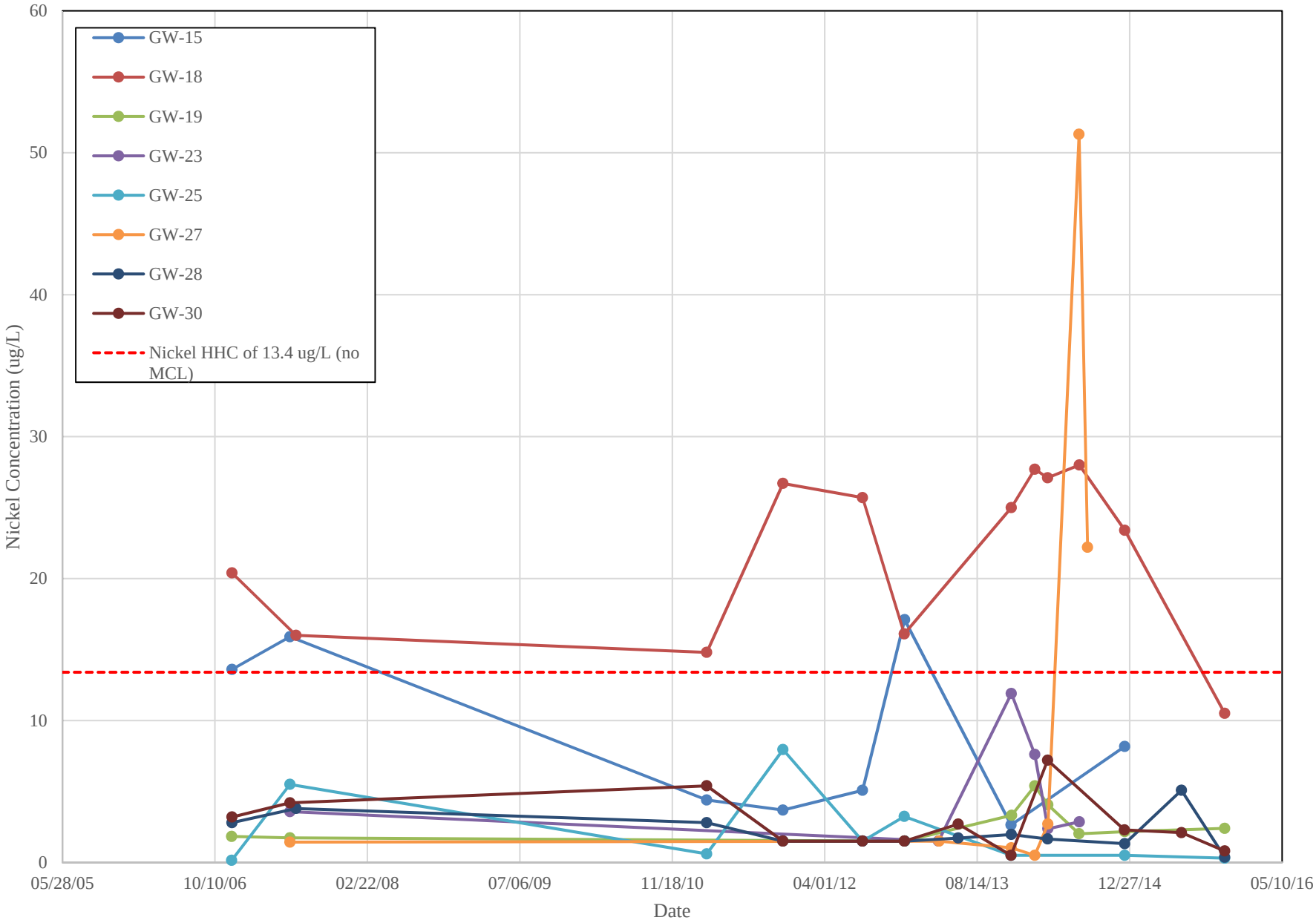


Figure C-6. Concentration Trends for Benzene in the Shallow Aquifer

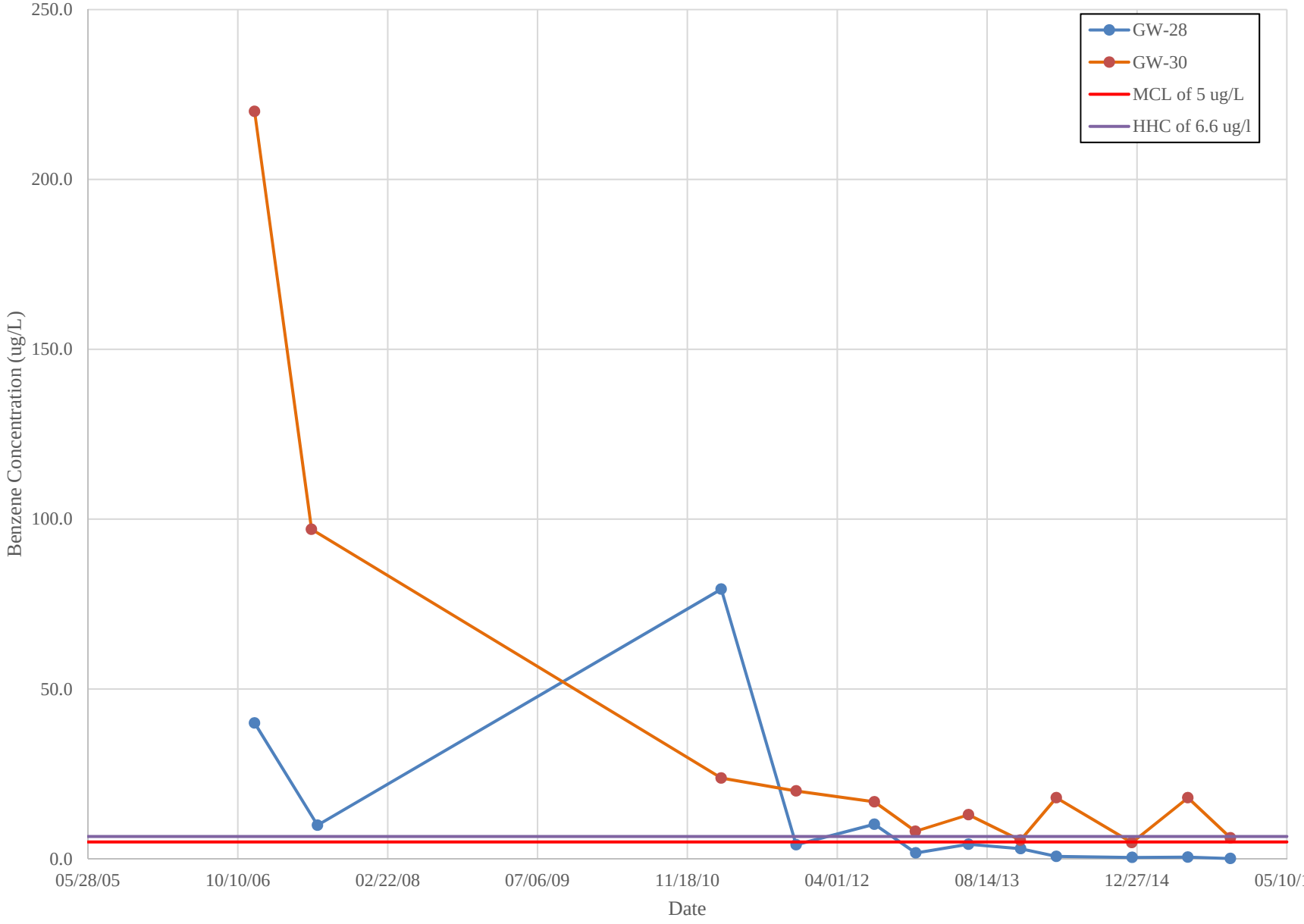
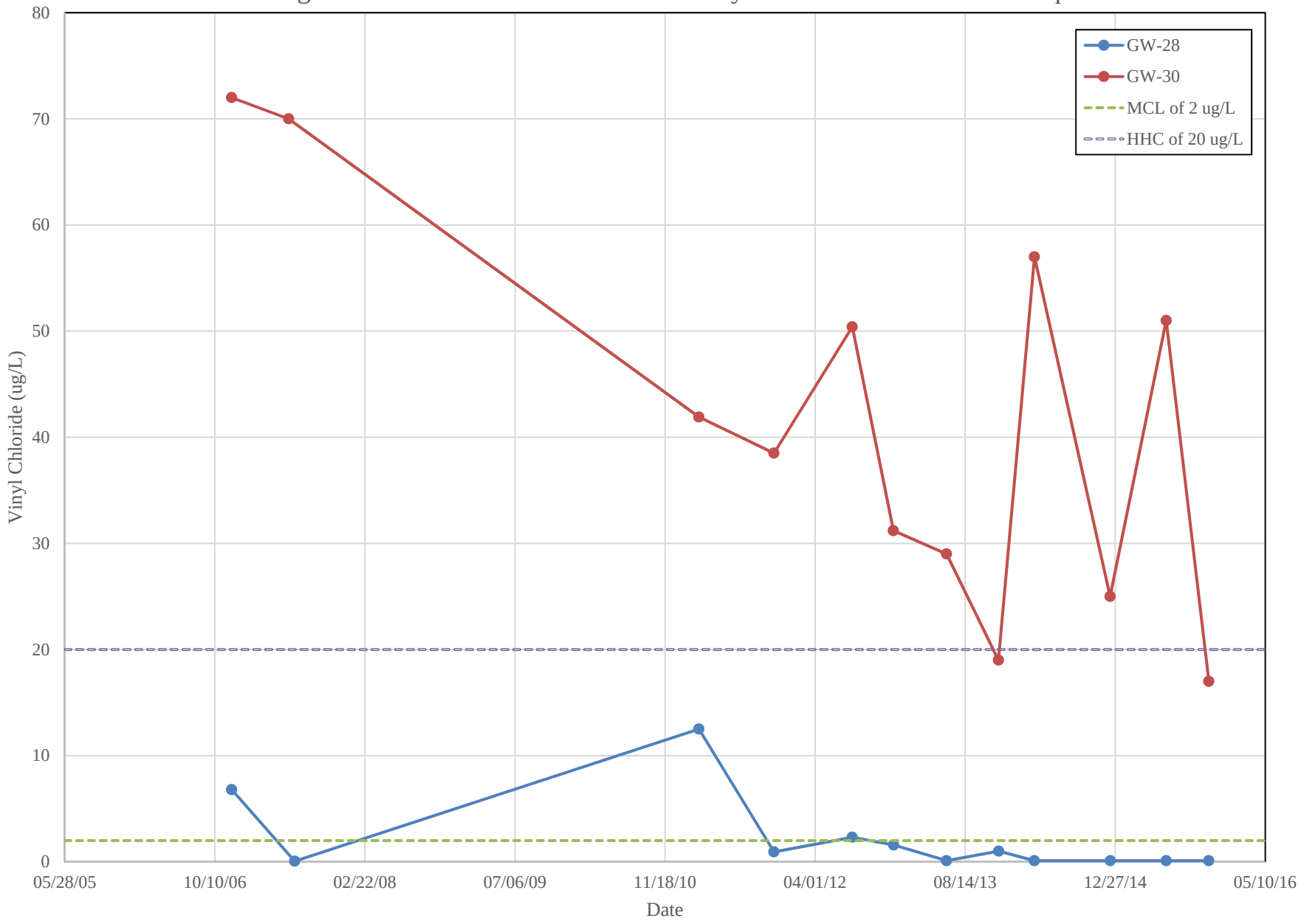


Figure C-7. Concentration Trends for Vinyl Chloride in the Shallow Aquifer



APPENDIX D

DEED NOTICE

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V357381

DEED NOTICE

10/12/01 300631572 V357381 $23.00

STATE OF TEXAS
COUNTY OF HARRIS

This Notice is filed pursuant to the rules of the Texas Natural Resource Conservation Commission (TNRCC) and affects the real property described in Exhibit A (Property).

This Notice is required for the following reasons:

As identified in reports on file with the TNRCC concerning the Sikes Disposal Pits Superfund Site, the shallow groundwater beneath the Property contains certain chemicals of concern that exceed the TNRCC-approved protective concentration levels. Use of this shallow groundwater for any purpose is prohibited unless otherwise approved in writing by the TNRCC or until such time as all the chemicals of concern no longer exceed their respective protective concentration levels. The shallow groundwater is continuing to be monitored in accordance with specific requirements of a TNRCC-approved plan unless or until the TNRCC makes any modifications to the plan.

For additional information, contact:

TNRCC
Central Records
12100 Park 35 Circle, Building D
Austin, Texas 78753

Mail: TNRCC - MC 199
P O Box 13087
Austin, Texas 78711-3087

544-88-1117

As of the date of this Notice, the record owners of fee title to the Property are M. W. McClendon with an address of P.O. Box 66160, Houston, Texas 77266.

This Notice may be rendered of no further force or effect only by a release executed by the TNRCC or its successor agencies and filed in the same Real Property Records as those in which this Notice is filed.

Executed this 25th day of September 2001.

By: Dal L. Davis
David L. Davis
Assistant Director, Remediation Division
Texas Natural Resource Conservation Commission

STATE OF TEXAS
COUNTY OF TRAVIS

BEFORE ME, on this the 25th day of September 2001, personally appeared David L. Davis, Assistant Director of the of the Remediation Division of the Texas Natural Resource Conservation Commission, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of September 2001.

Barbara Ann Daywood
Notary Public in and for the State of Texas

BARBARA ANN DAYWOOD
MY COMMISSION EXPIRES
AUGUST 08, 2005

County of Travis

My Commission Expires: 8-8-05

EXHIBIT A

Property Description

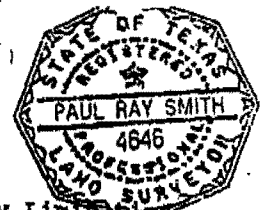
(Tract 5)

544-88-1118

FILE FOR RECORD
8:00 AM

OCT 12 2001

County Clerk, Harris County, Texas



north line of Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, said point also being the POINT OF BEGINNING;

THENCE S 87-38-56 W, with the south line of the Humphrey Jackson Labor, Abstract A-37, the south line of the Humphrey Jackson Survey, Abstract A-37, the north line of the Reuben White Survey, Abstract A-84, the south line of said M.W. Mc Clendon 19.9997 acre tract, the north line of said Sirocka 6.7198 acre tract, a distance of 1068.10 feet passing a 5/8" iron rod set in concrete (X = 3240024.87, Y = 764709.07) marking the southeast corner of a appurtenant easement (60.00 foot width) recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, a distance of 1092.87 feet passing a 5/8" iron rod set in concrete (X = 3240000.13, Y = 764708.06) marking the northwest corner of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed records) recorded in Volume 760, Page 61 of the Harris County Deed Records, and the northeast corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, in all a distance of 1302.32 feet to a 5/8" iron rod set in concrete (X = 3239790.85, Y = 764699.47) marking the southeast corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, the southwest corner of M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, also being in the north line of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, the centerline of a Southwestern Bell Telephone Easement (20.00 foot width) recorded in Volume 1377, Page 580 and also Volume 1398, Pages 633 and 634 of the Harris County Deed Records;

THENCE N 2-21-04 W, with the west line of said M.W. Mc Clendon 19.9997 acre tract, the east line of said 19.5090 acre tract, the west line of said appurtenant easement, a distance of 479.96 feet to a 5/8" iron rod set in concrete (X = 3239771.16, Y = 765179.02) marking the westerly corner of the M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code 176-90-1631 of the Harris County Official Public Records of Real Property, the west corner of a appurtenant easement (60.00 foot width) recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, and the easterly corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the

544-88-1129

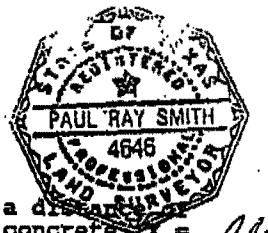
Harris County Deed Records;

THENCE N 57-09-41 W, with the west line of said M.W. Mc Clendon 19.9997 acre tract, east line of said 19.5090 acre tract, a distance of 612.66 feet to a 5/8" iron rod set in concrete (X = 3239256.41, Y = 765511.25) marking the northwest corner of the M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, the northeast corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, the southwest corner of the William R. Parker Jr. 85.1628 acre tract recorded under File No. J-305647, Film Code No. 069-89-0811, and File No. J-226172, Film Code 064-85-0167 of the Harris County Official Public Records of Real Property, said point also being in the easterly right of way line of T. & N.O. Railroad (Southern Pacific Railroad), the north line of the Humphrey Jackson Labor, Abstract A-84, and the south line of the Humphrey Jackson League;

THENCE S 81-49-24 E, with the north line of said M.W. Mc Clendon 19.9997 acre tract, the south line of the said William R. Parker Jr. 85.1628 acre tract, a distance of 509.27 feet passing a 5/8" iron rod set in concrete (X = 3239760.50, Y = 765438.82) marking the northwest corner of a appurtenant easement (60.00 foot width) recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, a distance of 570.29 feet passing a 5/8" iron rod set in concrete (X = 3239820.90, Y = 765430.14) marking the northeast corner of a appurtenant easement (60.00 foot width) recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, a distance of 898.85 feet passing a 5/8" iron rod set in concrete (X = 3240146.12, Y = 765383.41) marking the centerline of a Southwestern Bell Telephone easement (20.00 foot width) recorded in Volume 1398, Page 633, and Volume 2846, Page 476 of the Harris County Deed Records, in all a distance of 1833.89 feet to a 5/8" iron rod set in concrete (X = 3241071.65, Y = 765250.43) marking the northeast corner of the M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, the southeast corner of the William R. Parker Jr. 85.1628 acre tract recorded under File No. J-305647, Film Code No. 069-89-0811, and File No. J-226172, Film Code No. 064-85-0167 of the Harris County Official Public Records of Real Property, said point also being in the west line of the T.A. Ramsey & L.L. Anderson 41.6778 acre tract recorded in Volume 4968, Page 298 of the Harris County Deed Records;

THENCE S 2-21-04 E, with the east line of the said M.W. Mc Clendon 19.9997 acre tract, and the west line of the said

54-88-1121

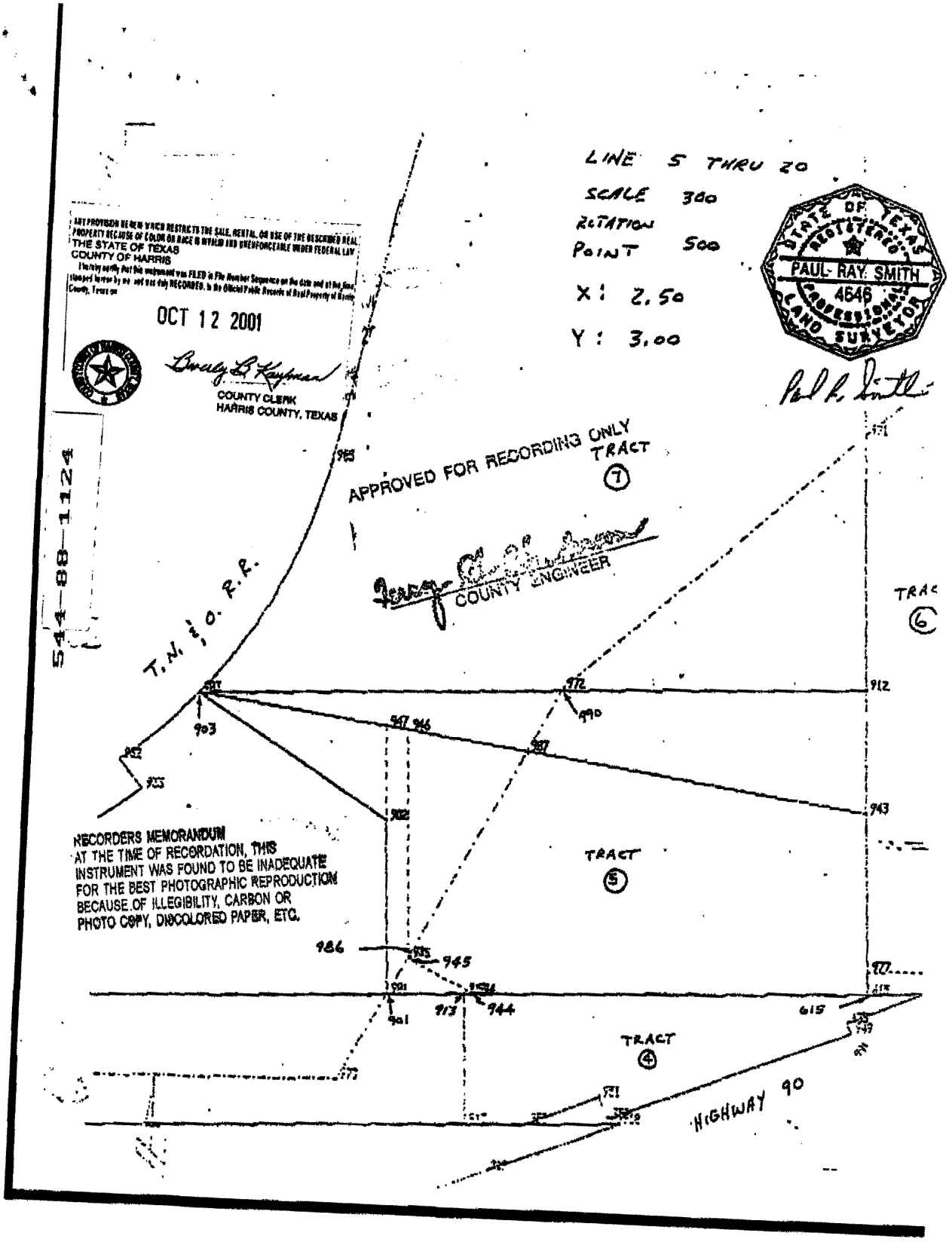


T.A. Ramsey & L.L. Anderson 41.6778 acre tract, a distance of 437.96 feet passing a 5/8" iron rod set in concrete (X = 3241089.61, Y = 764812.83) marking the northwest corner of a road right of way (60.00 foot width) recorded under File No. G-384414, Film Code No. 148-95-1997 of the Harris County Official Public Records of Real Property, in all a distance of 497.96 feet to a 5/8" iron rod set in concrete (X = 3241092.08, Y = 764752.89) to the POINT OF BEGINNING, and containing a computed area of 19.9997 acres (871,186 square feet).

NOTE 1: M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property is subject to a appurtenant easement (60.00 foot width) recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, and a Southwestern Bell Telephone easement (20.00 foot width) recorded in Volume 1398, Page 633, and Volume 2846, Page 476 of the Harris County Deed Records.

Note 2: All reference distances made to State Highway 90 such as the centerline station, offset lt., and width are actual surface distances shown on State Highway 90 Right of Way Map dated July 1929. All distances shown in parenthesis are also surface distances.

54-88-1122


LINE 5 THRU 20
SCALE 300
ROTATION
POINT 500
X: 2.50
Y: 3.00
PAUL RAY SMITH
4646
REGISTERED
PROFESSIONAL
LAND SURVEYOR
STATE OF TEXAS
ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW
THE STATE OF TEXAS
COUNTY OF HARRIS
I hereby certify that this instrument was FILED in File Number Sequence on the date and at the time stamped hereon by me and was duly RECORDED, in the Official Public Records of Real Property of Harris County, Texas on
OCT 12 2001
COUNTY CLERK
HARRIS COUNTY, TEXAS
54-88-124
APPROVED FOR RECORDING ONLY
TRACT 7
COUNTY ENGINEER
T.N.O. R.R.
TRACT 6
TRACT 5
TRACT 4
HIGHWAY 90
RECORDERS MEMORANDUM
AT THE TIME OF RECORDATION, THIS INSTRUMENT WAS FOUND TO BE INADEQUATE FOR THE BEST PHOTOGRAPHIC REPRODUCTION BECAUSE OF ILLEGIBILITY, CARBON OR PHOTO COPY, DISCOLORED PAPER, ETC.

V357383

DEED NOTICE

STATE OF TEXAS
COUNTY OF HARRIS

10/12/01 300631574 V357383 $47.00

This Notice is filed pursuant to the rules of the Texas Natural Resource Conservation Commission (TNRCC) and affects the real property described in Exhibit A (Property).

This Notice is required for the following reasons:

As identified in reports on file with the TNRCC concerning the Sikes Disposal Pits Superfund Site, the shallow groundwater beneath the Property contains certain chemicals of concern that exceed the TNRCC-approved protective concentration levels. Use of this shallow groundwater for any purpose is prohibited unless otherwise approved in writing by the TNRCC or until such time as all the chemicals of concern no longer exceed their respective protective concentration levels. The shallow groundwater is continuing to be monitored in accordance with specific requirements of a TNRCC-approved plan unless or until the TNRCC makes any modifications to the plan.

For additional information, contact:

TNRCC
Central Records
12100 Park 35 Circle, Building D
Austin, Texas 78753

Mail: TNRCC - MC 199
P O Box 13087
Austin, Texas 78711-3087

As of the date of this Notice, the record owners of fee title to the Property are Richard and Mabel Sikes with an address of 709 Sheldon Road, Houston, Texas 77530.

This Notice may be rendered of no further force or effect only by a release executed by the TNRCC or its successor agencies and filed in the same Real Property Records as those in which this Notice is filed.

Executed this 25th day of September 2001.

By: _____
David L. Davis
Assistant Director, Remediation Division
Texas Natural Resource Conservation Commission

STATE OF TEXAS
COUNTY OF TRAVIS

BEFORE ME, on this the 25th day of September 2001, personally appeared David L. Davis, Assistant Director of the of the Remediation Division of the Texas Natural Resource Conservation Commission, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of September 2001.

Barbara Ann Daywood
Notary Public in and for the State of Texas

BARBARA ANN DAYWOOD
MY COMMISSION EXPIRES
AUGUST 08, 2005

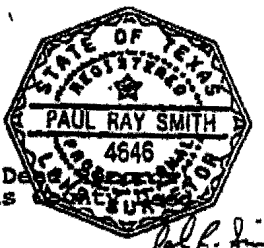
County of Travis

My Commission Expires: 8-8-05

54-88-1137

544-88-1139

TRACT 3 = 19.5090 AC.



in Volume 3085, Page 643 of the Harris County Deed Records, recorded in Volume 760, Page 61 of the Harris County Deed Records;

THENCE S 87-38-56 W, with the south line of the Humphrey Jackson Labor, Abstract A-37, the south line of the Humphrey Jackson Survey, Abstract A-37, the north line of the Reuben White Survey, Abstract A-84, the south line of said M.W. Mc Clendon 19.9997 acre tract, the north line of said Sirocka 6.7198 acre tract, a distance of 1092.87 feet to a 5/8" iron rod set in concrete (X = 3240000.13, Y = 764708.06) marking the northwest corner of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed records) recorded in Volume 760, Page 61 of the Harris County Deed Records, and the northeast corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, and being in the south line of the M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property;

THENCE S 87-38-56 W, with the south line of the Humphrey Jackson Labor, Abstract A-84, the south line of the Humphrey Jackson Survey, Abstract A-84, the north line of the Reuben White Survey, Abstract A-37, the north line of a 17.5362 acre tract conveyed to Jim and Edna Love, the south line of M.W. Mc Clendon 19.9997 acre tract, a distance of 208.45 feet to a 5/8" iron rod set in concrete (X = 3239790.85, Y = 764699.47) marking the southeast corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, the southwest corner of M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, also being in the north line of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, said point also being located in the centerline of a Southwestern Bell Telephone Easement (20.00 foot width) recorded in Volume 1377, Page 580 and also Volume 1398, Pages 633 and 634 of the Harris County Deed Records, said point also being the POINT OF BEGINNING:

THENCE S 87-38-56 W, with the south line of the Humphrey Jackson Labor, Abstract A-37, the south line of the Humphrey Jackson Survey, Abstract A-37, the north line of the Reuben White Survey, Abstract A-84, the south line of said 19.5090 acre tract, and the north line of said 17.5362 acre tract, a distance of 1781.24 feet passing a 5/8" iron rod set in concrete (X = 3238011.11, Y = 764626.40) marking the south line of a 19.5090 acre tract conveyed to Richard O. and Mabel

514-88-1141

Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, and the north line of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, in all a distance of 1930.33 feet to a point for corner (X = 3237862.14, Y = 764620.28) marking the southwest corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, and the northwest corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property;

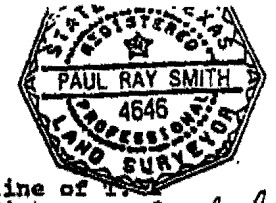
THENCE N 2-21-04 W, with the west line of said 19.5090 acre tract, a distance of 151.70 feet to a point for corner (X = 3237855.92, Y = 764771.85) marking the northwest corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, said point also being in the southerly right of way line of the T.& N.O. Railroad (Southern Pacific Railroad);

THENCE N 74-53-12 E, with the northerly line of said 19.5090 acre tract, and the southerly right of way line of said T. & N.O. Railroad (Southern Pacific Railroad) a distance of 113.86 feet passing a 5/8" iron rod set in concrete (X = 3237965.84, Y = 764801.54) marking the north line of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes recorded in Volume 1595, Page 227 of the Harris County Deed Records, and the southerly right of way line of T. & N.O. Railroad (Southern Pacific Railroad), in all a distance of 725.13 feet to a 5/8" iron rod set in concrete (X = 3238555.97, Y = 764960.91) marking the northerly corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, said point also being in the southerly right of way line of T. & N.O. Railroad (Southern Pacific Railroad), said point also being the Point Of Curvature of a tangent curve in a northeasterly direction;

THENCE with the southeasterly right of way line of T. & N.O. Railroad (Southern Pacific Railroad), and the northwesterly line of said 19.5090 acre tract continuing along a tangent curve to the left in a northeasterly direction (Central Angle = 22-52-50; Radius = 1575.26 feet; Chord = N 63-26-47 E, 624.89 feet) an arc distance of 629.06 feet to a 5/8" iron rod set in concrete (X = 3239114.94, Y = 765240.26) marking the northerly corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes recorded in Volume 1595, Page 227 of the Harris County Deed Records, said point also being in the southeasterly right of way line of T. & N.O. Railroad (Southern Pacific Railroad);

THENCE N 37-59-38 W, with the westerly line of said 19.5090

544-88-1142



acre tract, and the Northeasterly right of way line of T. & N.O. Railroad (Southern Pacific Railroad), a distance of 99.99 feet to a 5/8" iron rod set in concrete (X = 3239053.39, Y = 765319.06) marking a northwesterly corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes recorded in Volume 1595, Page 227 of the Harris County Deed Records, and the southeasterly right of way line of T. & N.O. Railroad (Southern Pacific Railroad);

THENCE with the southeasterly right of way line of the T. & N.O. Railroad (Southern Pacific Railroad), and the northwesterly line of said 19.5090 acre tract continuing along a tangent curve to the left in a northeasterly direction (Central Angle = 10-52-25; Radius = 1475.27 feet; Chord = N 46-34-10 E, 279.55 feet) an arc distance of 279.97 feet to a 5/8" iron rod set in concrete (X = 3239256.41, Y = 765511.25) marking a northerly corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes recorded in Volume 1595, Page 227 of the Harris County Deed Records, said point also marking the northwesterly corner of M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, and the southwest corner of the William R. Parker Jr. 85.1628 acre tract recorded under File No. T-305647, Film Code No. 069-89-0811 of the Harris County Official Public Records of Real Property, said point also being in the southeasterly right of way line of the T. & N.O. Railroad (Southern Pacific Railroad), the north line of the Humphrey Jackson Labor, Abstract A-37, and the south line of the Humphrey Jackson League, Abstract A-37;

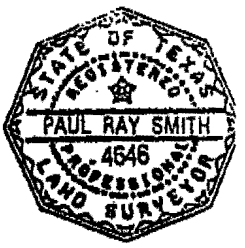
THENCE S 57-09-41 E, with the easterly line of said 19.5090 acre tract, and the westerly line of said M.W. Mc Clendon 19.9997 acre tract, a distance of 612.66 feet to a 5/8" iron rod set in concrete (X = 3239771.16, Y = 765179.02) marking the easterly corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes recorded in Volume 1595, Page 227 of the Harris County Deed Records, and the westerly corner of M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property;

THENCE S 2-21-04 E, with the east line of said 19.5090 acre tract, and the west line of said M.W. Mc Clendon 19.9997 acre tract, a distance of 479.96 feet to the POINT OF BEGINNING, and containing a computed area of 19.5090 acres (849,814 square feet).

Note 1: 19.5090 acre tract is shown on IT/DMC Plat 1002-0021 dated 4-15-91.

Note 2: All reference distances made to State Highway 90, such as centerline station, offset lt., and width are actual surface distances shown on State Highway 90 Right of Way Map

544-88-1143



Coordinate File Name: SDP-C3.CRD Lowest pt #: 1 Highest pt #: 2020
Job # : 500810
Description: DIKES DISPOSAL PITS COORDINATE FILE FOR BOUNDARY SURVEY
# of chars. in point descr.: 10

Paul Little

FROM	TYPE	BEARING	DISTANCE	TO	NORTHING	EASTING
START				948	764758.719	3241245.453
948	INV	S 87-49-24 W	155.488	615	764752.680	3241092.075
615	S.S.	S 87-38-56 W	1068.102	944	764709.074	3240024.873
615	S.S.	S 87-38-56 W	1092.868	913	764708.058	3240000.128
615	INV	S 87-28-56 W	1302.321	901	764699.465	3239790.851
START				901	764699.465	3239790.851
901	S.S.	S 87-38-56 W	1781.236	984	764626.395	3238011.114
901	INV	S 87-38-56 W	1930.331	914	764620.279	3237862.144
914	INV	N 2-21-04 W	151.699	935	764771.850	3237855.921
935	S.S.	N 74-53-12 E	113.856	985	764801.536	3237965.839
935	INV	N 74-53-12 E	725.128	934	764960.913	3238555.969
RADIUS POINT				904	766481.684	3238145.253

DELTA:- 22-52-50 R= 1575.257 A= 629.061 C= 624.889 T= 318.778

P.C. - P.T.

934	INV	N 63-28-47 E	624.889	933	765240.260	3239114.943
933	INV	N 37-59-38 W	99.991	932	765319.080	3239053.391
RADIUS POINT				904	766481.684	3238145.253

DELTA:- 10-52-25 R= 1475.266 A= 279.974 C= 279.554 T= 140.409

P.C. - P.T.

932	INV	N 46-34-10 E	279.554	903	765511.247	3239256.405
903	INV	S 57-09-41 E	612.659	902	765179.017	3239771.162
902	INV	S 2-21-04 E	479.956	901	764699.465	3239790.851
				901	764699.465	3239790.851
		N 0-00-00 E	0.000	CLOSING LINE		
			4908.800	DISTANCE TRAVERSED		

>100000000 PRECISION
AREA: 849813.69 Square Feet 19.5090 Acres

544-88-1145

CAUTION: PROTECTION IS AFFORDED ONLY UNDER THE TERMS OF THE PROPOSED POLICY. STEWART TITLE GUARANTY COMPANY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THIS REPORT OR FOR VERBAL STATEMENT. This report is a preliminary report made for the use of Stewart Title Guaranty Company only, to determine whether a title insurance policy can be issued. If a policy is furnished to the parties to the transaction it is to facilitate preparation of the instruments, to point out curative requirements, if any, and to show the records of the Company's title search upon which the Company may rely. None of the information contained herein, or the absence of other information, constitutes representations to any party, other than the Company, as to the status of title. If a title defect or encumbrance shown hereon is not disclosed hereon, the Company shall not be liable by reason of furnishing this report or for any verbal statements related thereto. The Company shall not be liable for any title defect unless a title insurance policy is hereafter issued insuring against such defect, and the applicable premium paid therefor, and the Company's liability shall exist only under the terms of its policy (as prescribed by the State Board of Insurance) and as measured and limited thereby.

TITLE REPORT 500-16-2649

EXAMINER:

GF NO. 881133790

DATE: June 13, 1988 @ 8:00 A.M. CLOSER: RON ORR

APPLICANT: TBA

Examination from: Records of STEWART TITLE COMPANY
Subject to: Claims of persons occupancy discrepancies in area and boundaries; unpaid bills for labor or material in connection with repairs or new improvements; unpaid taxes.

TITLE GOOD IN: RICHARD O. SIKES and wife, MABEL SIKES by virtue of Deed from ELIZABETH SIMKINS MASTERSON, et al dated March 1, 1947 recorded in Volume 1595 Page 227 of the Deed Records of Harris County, Texas.

CORRECT DESCRIPTION OF PROPERTY:

All that tract of land out of the HUMPHREY JACKSON LEAGUE AND LABOR containing Twenty (20) acres and described in Exhibit "A" attached.

SUBJECT TO:

RESTRICTIONS:

None of Record.

EASEMENTS AND RIGHTS OF WAY:

Subject to any easements, rights-of-way, roadways, encroachments, etc., which a survey or physical inspection of the premises might disclose.

MINERALS AND/OR ROYALTIES:

All the oil, gas and other minerals, the royalties, bonuses, rentals and all other rights in connection with same all of which are expressly excepted herefrom and not insured hereunder, as same are set forth in instrument recorded in Volume 1595, Page 227 of the Deed Records of Harris County, Texas.

OTHER EXCEPTIONS:

Subject to the terms, conditions and stipulations of any and all Lease Agreements, amendments and supplements thereto, existing with the tenants in possession, whether written or oral and whether recorded or unrecorded.

Subject property is subject to overflow from the Flood Waters of the San Jacinto River after extra heavy upstream rains.

Continued on next page

544-88-1147

GF No. 881133790
TITLE REPORT CONTINUATION

OTHER EXCEPTIONS CONTINUED:
Subject to the rights for Lateral Support of any and all easements, right of way, pipelines, roadways that cross subject property whether written or oral and whether recorded or unrecorded.

The company by this report does not insure against the exercise of power of competent governmental authority to declare the above described property to be contaminated with hazardous and/or toxic materials.

LIENS:

Note: We find no outstanding liens of record affecting the subject property. Inquiry should be made concerning the existence of any unrecorded lien or other indebtedness which could give rise to any security interest claim in the subject property.

MISCELLANEOUS:

We are to be furnished with a survey, complete with the correct metes and bounds description of the subject property made by a licensed Public Surveyor of the State of Texas, suitable to this Title Company. When same is submitted, it is to be returned to Examiner for inspection and approval.

The property covered herein is subject to the terms, conditions, provisions and stipulations of Ordinance #85-1878 of the City of Houston enacted October 23, 1985 pertaining to the platting and replatting of real property and the establishment of building set back lines within such boundaries. This is pointed out for information and is not intended to waive the provisions of any title policy issued which excludes from coverage loss or damage as a consequence of the exercise and enforcement or attempted enforcement of governmental police powers over land described therein.

There is pending in the 125th Judicial District Court of Harris County, Texas, Cause No. 8624307 action styled Richard Sikes vs. Jim Love Prior to closing, require said suit be released with prejudice.

Exhibit "A"

The land above referred to is situated in Harris County, Texas, and is described by metes and bounds as follows, to-wit:

Twenty (20) acres of land, more or less, out of the Humphrey Jackson League and Labor, in Harris County, Texas, situated on the east bank of San Jacinto River, about eighteen miles northeast of the City of Houston, and described by metes and bounds as follows:

Beginning at a cedar stump and pipe on the east bank of the San Jacinto River (from which a magnolia tree marked "X" bears N. 58½ deg. E. 33 ft. and a magnolia tree marked "X" bears S. 62½ deg. E. 50 ft.) the south west corner of the Humphrey Jackson Labor;

Thence North along the east bank of the San Jacinto River about 240 ft. to the south right of way line of the Texas and New Orleans Railroad, 200 ft. south of the center of the track of said railroad for the north west corner;

Thence following the south right of way line of the said railroad in an east and north direction, 1210 ft. parallel and 200 ft. south of the center of said railroad track, for corner;

Thence North and west along a jog in said right of way 100 ft. to a point 100 ft. from the center of the track of said railroad, for a corner;

Thence east and north 280 ft. along the south right of way line of said railroad, parallel and 100 ft. from the center of the track of said railroad, to a point, being the intersection of the north line of the Humphrey Jackson Labor, and the south right of way line of the Texas and New Orleans Railroad, for corner;

Thence S. 45 deg. E. 500 ft. for a corner; Thence S. 480 ft. to the south line of the Humphrey Jackson Labor for a corner;

Thence W. 1862.4 ft. to the place of beginning, containing twenty (20) acres of land, more or less, including a lake, known as Round or Tank Lake, and being the same property conveyed by H. Masterson to W. A. Childress, et al, Trustees of the Houston Local Council Boy Scouts of America, the use of which land has been abandoned by said Houston Local Council Boy Scouts of America and was reconveyed by the Trustees thereof to the Estate of H. Masterson, deceased;

544-88-1149

TEXAS WATER COMMISSION
Sikes Disposal Pits
Remedial Action
Metes And Bounds Description
6.7198 Acres
(292,713 square feet)
Reuben White Survey, A-84
Harris County, Texas

Paul Smith

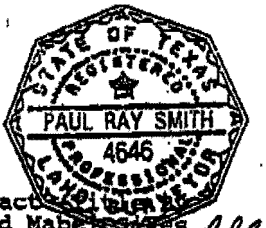
544-88-1151

A tract of land being 6.7198 acres (292,713 square feet) out of the Reuben White Survey, Abstract A-84, Harris County, Texas and being all of that 6.7198 acre Sirocka tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, said tract being more particulary described by metes and bounds as follows with all bearings and coordinates referenced to the Texas Coordinate System (N.A.D. 1927) South Central Zone (all distances and acreages herein recited are grid and may be converted to surface by multiplying by the combined factor 1.00009):

BEGINNING at a 5/8" iron rod in concrete (X = 3241245.45, Y = 764758.72) set in the northerly right of way line of State Highway 90 (centerline station = 36+23.43, offset lt. = 110.00 feet) said point marking the northeast corner of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, the southerly corner of the T.A. Ramsey & L.L. Anderson 41.6778 acre tract recorded in Volume 4968, Page 298 of the Harris County Deed Records, said corner also being located in the in the south line of the Humphrey Jackson Labor, Abstract A-37, the south line of the Humphrey Jackson Survey, Abstract A-37, and the north line of the Reuben White Survey, Abstract A-84;

THENCE S 67-00-43 W, with the northerly right of way line of State Highway 90 (offset lt. = 110.00 feet) and the southerly line of said Sirocka 6.7198 acre tract, a distance of 223.41 feet to a 5/8" iron rod set in concrete (X = 3241039.788, Y = 764671.47) marking the southerly corner of Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volumes 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, said point also being in the northerly right of way line of State Highway 90 (centerline station = 36+23.43, offset lt. = 110.00 feet);

THENCE S 22-59-17 E, with the northerly right of way line of State Highway 90, and the southerly line of said Sirocka

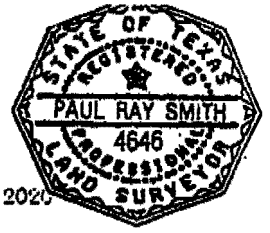


54-88-153

southwest corner of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, and marking the southeasterly corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, said point also being in the northerly line of a 20.2137 acre tract conveyed to Jim Love and recorded under File No. L-283655, Film Code No. 189-30-1254 of the Harris County Official Public Records of Real Property;

THENCE N 2-21-04 W, with the west line of said Sirocka 6.7198 acre tract and the east line of said 17.5362 acre tract, a distance of 363.89 feet to a 5/8 iron rod set in concrete (X = 3240000.13, Y = 764708.06) marking the northwest corner of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, also marking the northeast corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, said point being in the south line of M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, the north line of the Reuben White Survey, Abstract A-84, the southerly line of the Humphrey Jackson Labor, Abstract A-37, and the southerly line of the Humphrey Jackson Survey, Abstract A-37;

THENCE N 87-38-56 E, with the north line of said Sirocka 6.7198 acre tract, the south line of said M.W. Mc Clendon 19.9997 acre tract, the north line of the Reuben White Survey, Abstract A-84, the south line of the Humphrey Jackson Labor, Abstract A-37, the south line of the Humphrey Jackson Survey, Abstract A-37, a distance of 24.77 feet passing a 5/8" iron rod set in concrete (X= 3240024.87, Y = 764709.07) marking the southeast corner of a appurtenant easement (60.00 foot width) recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, in all a distance of 1092.87 feet to a 5/8" iron rod set in concrete (X = 3241092.08, Y = 764752.89) marking the southeast corner of M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, the southwest corner of the T.A. Ramsey & L.L. Anderson 41.6778 acre tract recorded in Volume 4968, Page 298 of the Harris County Deed Records, said point also being in the north line of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed



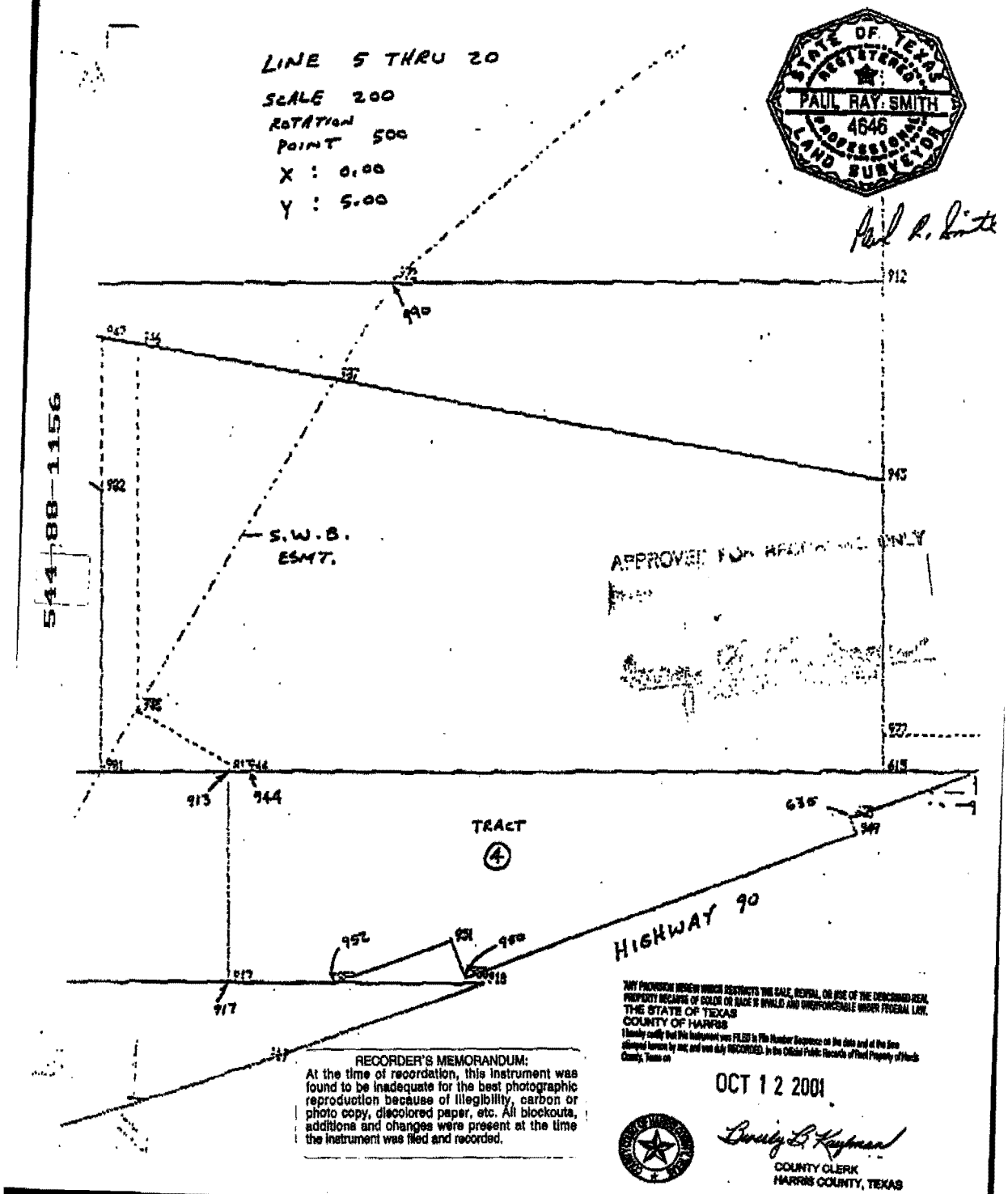
Coordinate File Name: SDP-08.CRD Lowest pt #: 1 Highest pt #: 2020
Job # : 500800
Description: SIKES DISPOSAL PITS COORDINATE FILE FOR BOUNDARY SURVEY
# of chars. in point descr.: 10

Paul Smith

FROM	TYPE	BEARING	DISTANCE	TO	NORTHING	EASTING
START				948	764758.719	3241245.453
948	INV	S 67-00-43 W	223.407	635	764671.470	3241039.788
635	INV	S 22-59-17 E	29.997	949	764643.855	3241051.503
949	INV	S 67-00-43 W	899.936	950	764370.503	3240407.151
950	INV	N 22-59-17 W	69.994	951	764434.839	3240379.816
951	INV	S 67-00-43 W	214.012	952	764351.359	3240182.799
952	INV	S 87-38-56 W	167.885	917	764344.472	3240015.055
917	INV	N 2-21-04 W	363.892	913	764708.058	3240000.128
913	S.S.	N 87-38-56 E	24.766	944	764709.074	3240024.873
913	INV	N 87-38-56 E	1092.868	615	764752.890	3241092.075
615	INV	N 87-49-24 E	153.488	948	764758.719	3241245.453
				948	764758.719	3241245.453
		N 0-00-00 E	0.000	CLOSING LINE		
			3016.479	DISTANCE TRAVERSED		

>100000000 PRECISION
AREA: 292713.24 Square Feet 6.7198 Acres

54-88-1155



RECORDER'S MEMORANDUM:
At the time of recordation, this instrument was found to be inadequate for the best photographic reproduction because of illegibility, carbon or photo copy, discolored paper, etc. All blockouts, additions and changes were present at the time the instrument was filed and recorded.

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.
THE STATE OF TEXAS
COUNTY OF HARRIS
I hereby certify that this instrument was FILED in File Number Sequence on the date and at the time stamped hereon by me; and was duly RECORDED, in the Official Public Records of Real Property of Harris County, Texas on

OCT 12 2001

COUNTY CLERK
HARRIS COUNTY, TEXAS

V357382

DEED NOTICE

STATE OF TEXAS
COUNTY OF HARRIS

10/12/01 300631573 V357382 $29.00

This Notice is filed pursuant to the rules of the Texas Natural Resource Conservation Commission (TNRCC) and affects the real property described in Exhibit A (Property).

This Notice is required for the following reasons:

As identified in reports on file with the TNRCC concerning the Sikes Disposal Pits Superfund Site, the shallow groundwater beneath the Property contains certain chemicals of concern that exceed the TNRCC-approved protective concentration levels. Use of this shallow groundwater for any purpose is prohibited unless otherwise approved in writing by the TNRCC or until such time as all the chemicals of concern no longer exceed their respective protective concentration levels. The shallow groundwater is continuing to be monitored in accordance with specific requirements of a TNRCC-approved plan unless or until the TNRCC makes any modifications to the plan.

For additional information, contact:

TNRCC
Central Records
12100 Park 35 Circle, Building D
Austin, Texas 78753

Mail: TNRCC - MC 199
P O Box 13087
Austin, Texas 78711-3087

544-88-1125

As of the date of this Notice, the record owners of fee title to the Property are Jim and Edna Love with an address of 211 Highway 90, Crosby, Texas 77532.

This Notice may be rendered of no further force or effect only by a release executed by the TNRCC or its successor agencies and filed in the same Real Property Records as those in which this Notice is filed.

Executed this 25th day of September 2001.

By: David L. Davis
David L. Davis
Assistant Director, Remediation Division
Texas Natural Resource Conservation Commission

STATE OF TEXAS
COUNTY OF TRAVIS

BEFORE ME, on this the 25th day of September 2001, personally appeared David L. Davis, Assistant Director of the of the Remediation Division of the Texas Natural Resource Conservation Commission, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity herein expressed.

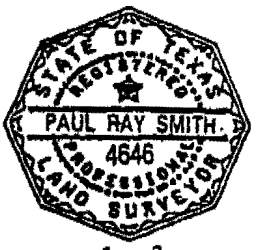
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of September 2001.

Barbara Ann Daywood
Notary Public in and for the State of Texas

BARBARA ANN DAYWOOD
MY COMMISSION EXPIRES
AUGUST 08, 2005

County of Travis

My Commission Expires: 8-8-05



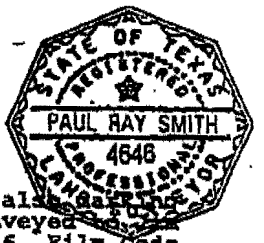
TEXAS WATER COMMISSION
Sikes Disposal Pits
Remedial Action
Metes And Bounds Description
17.5362 Acres
(763,876 square feet)
Reuben White Survey, A-84
Harris County, Texas

544-88-1127

A tract of land being 17.5362 acres (763,876 square feet) out of the Reuben White Survey, Abstract A-84, Harris County, Texas and being all of that 17.5362 acre tract conveyed to Jim and Edna Love by deed recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property; said tract being more particulary described by metes and bounds as follows with all bearings and coordinates referenced to the Texas Coordinate System (N.A.D. 1927) South Central Zone (all distances and acreages herein recited are grid and may be converted to surface by multiplying by the combined factor 1.00009):

COMMENCING at a 5/8" iron rod in concrete (X = 3241245.45, Y = 764758.72) set in the northerly right of way line of State Highway 90 (centerline station = 36+23.43, offset lt. = 110.00 feet) said point marking the northeast corner of the Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded in Volume 3085, Page 643 of the Harris County Deed Records) recorded in Volume 760, Page 61 of the Harris County Deed Records, the southerly corner of the T.A. Ramsey & L.L. Anderson 41.6778 acre tract recorded in Volume 4968, Page 298 of the Harris County Deed Records, said corner also being located in the in the south line of the Humphrey Jackson Labor, Abstract A-37, the south line of the Humphrey Jackson Survey, Abstract A-37, and the north line of the Reuben White Survey, Abstract A-84;

THENCE S 87-49-24 W, with the south line of the Humphrey Jackson Labor, Abstract A-84, the south line of the Humphrey Jackson Survey, Abstract, A-84, the north line of the Reuben White Survey, Abstract A-37, south line of said T.A. Ramsey & L.L. Anderson 41.6778 acre tract, and the north line of said Sirocka 6.7198 acre tract, a distance of 153.49 feet to a 5/8" iron rod set in concrete (X = 3241092.08, Y = 764752.89) marking the southwest corner of said T.A. Ramsey & L.L. Anderson 41.6778 acre tract recorded in Volume 4968, Page 298 of the Harris County Deed Records, the southeast corner of the M.W. Mc Clendon 19.9997 acre tract recorded under File No. G-838726, Film Code No. 176-90-1631 of the Harris County Official Public Records of Real Property, and being in the north line of Sirocka 6.7198 acre tract (Title By Limitation (Adverse Possession) by Richard O. and Mabel Sikes recorded



Official Public Records of Real Property, and also marking the southwest corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property;

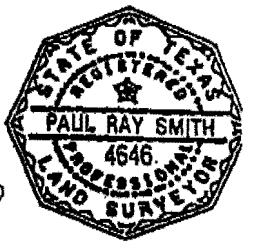
THENCE N 3-56-04 W, with the westerly line of said 17.5378 acre tract a distance of 15.62 feet to a point for corner (X = 3237953.99, Y = 764275.48) marking the westerly corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property;

THENCE N 14-57-04 W, with the westerly line of said 17.5362 acre tract a distance of 152.02 feet passing a point for corner (X = 3237914.77, Y = 764422.35) in the centerline of a Southwestern Bell Telephone easement (20.00 feet in width) recorde in Volume 1377, Page 580 of the Harris County Deed Records, in all a distance of 356.87 feet to a point for corner (X = 3237861.92, Y = 764620.27) marking the northwest corner of a 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property, and also marking the southwest corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records;

THENCE N 87-38-56 E, with the north line of said 17.5362 acre tract, the south line of said 19.5090 acre tract, the north line of the Reuben White Survey, Abstract A-37, the south line of the Humphrey Jackson Labor, Abstract A-84, the south line of the Humphrey Jackson Survey, Abstract A-84, a distance of 149.10 feet passing a set 5/8" iron rod set in concrete (X = 3238011.11, Y = 764626.40), a distance of 1930.33 feet passing a 5/8" iron rod set in concrete (X = 3239790.85, Y = 764699.47) marking the southeast corner of a 19.5090 acre tract conveyed to Richard O. and Mabel Sikes and recorded in Volume 1595, Page 227 of the Harris County Deed Records, said point also being in the centerline of a Southwestern Bell Telephone easement (20.00 feet width) recorded in Volume 1377, Page 580, Volume 1398, Page 633, Volume 2846, Page 476 of the Harris County Deed Records, in all a distance of 2139.79 feet to the POINT OF BEGINNING, containing a computed area of 17.5362 acres (763,876 square feet).

NOTE 1: 17.5362 acre tract conveyed to Jim and Edna Love and recorded under File No. K-371046, Film Code No. 036-71-1889 of the Harris County Official Public Records of Real Property is subject to an ingress and egress easement shown on Exhibit "A" of the Final Judgement, Cause No. 477,742 of the 157th District Court, Harris County, Texas. Said 17.5362 acre tract

544-88-1129



Coordinate File Name: SIP-08.CRD Lowest pt #: 1 Highest pt #: 2020
Job # : 500800
Description: SIKES DISPOSAL PITS COORDINATE FILE FOR BOUNDARY SURVEY
# of chars. in point descr.: 10

FROM	TYPE	BEARING	DISTANCE	TO	NORTHING	EASTING
START				948	764758.719	3241245.453
946	INV	S 87-49-24 W	153.488	615	764752.890	3241092.075
615	S.S.	S 87-38-56 W	1068.102	944	764709.074	3240024.873
615	INV	S 87-38-56 W	1092.868	913	764708.058	3240000.128
START				913	764708.058	3240000.128
913	INV	S 2-21-04 E	363.892	917	764344.472	3240015.055
917	S.S.	S 87-38-56 W	1673.814	982	764275.808	3238342.850
917	INV	S 87-38-56 W	2061.503	916	764259.904	3237955.288
916	INV	N 3-56-04 W	15.618	915	764275.486	3237954.216
915	S.S.	N 14-57-04 W	152.018	974	764422.357	3237914.996
915	INV	N 14-57-04 W	358.874	914	764620.279	3237862.144
914	S.S.	N 87-38-56 E	149.095	984	764626.395	3238011.114
914	S.S.	N 87-38-56 E	1930.331	901	764699.465	3239790.951
914	INV	N 87-38-56 E	2139.785	913	764708.058	3240000.128
				913	764708.058	3240000.128
		N 0-00-00 E	0.000	CLOSING LINE		
			4937.673	DISTANCE TRAVERSED		

>100000000 PRECISION
AREA: 763875.55 Square Feet 17.5362 Acres

54-88-1131

TX-D-83054

LAND IDENTITY 1

CAUTION: PROTECTION IS AFFORDED ONLY UNDER THE TERMS OF THE PROPOSED POLICY. STEWART TITLE GUARANTY COMPANY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THIS REPORT OR FOR VERBAL STATEMENT. This is a copy of a preliminary report made for use of Stewart Title Guaranty Company only, to determine whether a title insurance policy can be issued. If a copy is furnished to the parties to the transaction it is to facilitate preparation of the necessary instruments, to point out curative requirements, if any, and to show the results of the Company's title search upon which only the Company may rely. None of the information contained herein, or the absence of other information, constitutes a representation to any party, other than the Company, as to the status of title. If a title defect or encumbrance should exist which is not disclosed herein, the Company shall not be liable by reason of furnishing this report or for any verbal statements related thereto. The Company shall not be liable for any title defect unless a title insurance policy is hereafter issued by it, insuring against such defect, and the applicable premium paid therefor, and the Company's liability then shall exist only under the terms of its policy (as prescribed by the State Board of Insurance) and as measured and limited thereby.

TITLE REPORT

GF NO. 88113379-B

DATE: June 13, 1988 @ 8:00 A.M. CLOSER: RON ORR

APPLICANT: TBA

Examination from: Records of STEWART TITLE COMPANY
Subject to: Claims of present occupancy; discrepancies in area and boundaries; unpaid bills for labor or material in connection with repairs or new improvements; unpaid taxes.

TITLE GOOD IN: JIM LOVE and wife, EDNA LOVE by virtue of Deed from GRACE D. MC COY dated August 11, 1982 recorded under Clerk's File No. K-371046 of the Real Property Records of Harris County, Texas.

CORRECT DESCRIPTION OF PROPERTY:

All that certain tract of land located in the Reuben White Survey, Abstract 84, in Harris County, Texas, containing 17.584 acres of land, more or less, and described in Exhibit "A" attached.

17.584 ac. M/L 27.40

SUBJECT TO:

RESTRICTIONS:

None of Record.

EASEMENTS AND RIGHTS OF WAY:

Subject to any easements, rights-of-way, roadways, encroachments, etc., which a survey or physical inspection of the premises might disclose.

Easements granted to Southwestern Bell Telephone Company as reflected in instruments recorded in Volume 821, Page 28, Volume 2846, Page 476 and Volume 2849, Page 674 all of the Deed Records of Harris County, Texas.

Unlocated pipeline right-of-way easement in favor of Houston Gulf Gas Company as set forth in instrument recorded in Volume 815, Page 210 of the Deed Records of Harris County, Texas.

Subject to the rights of the General Public as to ingress and egress that passes through subject property as set forth in Final Judgement under Cause No. 477742 if the 157th Judicial District in the District Court of Harris County, Texas.

MINERALS AND/OR ROYALTIES:

Although there are no specific reservations of minerals on this property, all the oil, gas and other minerals, the royalties,

Continued on next page

541-88-1133

GF No. 88113379-B
TITLE REPORT CONTINUATION

MISCELLANEOUS CONTINUED:
Abstract of Judgment filed May 26, 1981 in the amount of $1,204.04 plus cost and interest, in favor of Montgomery Ward & Co., Inc., against Jim D. Love dba Jim Love Sand Co., recorded under Clerk's File No. G-985030 of the Real Property Records of Harris County, Texas.

Abstract of Judgment filed November 15, 1984 in the amount of $228.50 plus cost and interest, in favor of L. A. Goodman, M. D., against Edna L. Love, recorded under Clerk's File No. J-781802 of the Real Property Records of Harris County, Texas.

There is pending in the 125th Judicial District Court of Harris County, Texas, Cause No. 8624307 action styled Richard Sikes vs. Jim Love prior to closing, require said suit be released with prejudice.

Exhibit "A"

508-16-2607

54-88-1135

tract or parcel of land in the Northwest corner of the REUBEN WHITE LEAGUE, Abstract No. 84, in Harris County, Texas, more particularly described as follows:

BEGINNING at an iron pipe at the Northwest corner of the Reuben White League, said pipe being located on the East bank of the San Jacinto River South 18 deg. 35' East 362.5 feet from the center line of the T. & N.O. RR a 12 inch magnolia marked "X" bears Northwest 12.5 feet from said pipe;

THENCE South 12 deg. 41' East 358 feet to a stake on the East bank of said River;

THENCE South 1 deg. 40' West 15.62 feet to a stake on the East bank of said River marking the Southwest corner of the Tract herein described;

THENCE North 89 deg. 55' East 2061.69 feet along a line parallel with the North line of said Reuben White League to an iron pipe at the Southeast corner of the Tract herein described and the Southwest corner of the Sirocka Tract;

THENCE North 0 deg. 05' West 365 feet to an iron pipe in the North line of said League marking the Northeast corner of the Tract herein described and the Northwest corner of said Sirocka Tract;

THENCE South 89 deg. 55' West 2139.1 feet along the North line of said Reuben White League to the POINT OF BEGINNING, and containing 17.594 acres of land.

544-88-1136

FILE FOR RECORD
8:00 AM

OCT 12 2001

Beverly B. Kaufman
County Clerk, Harris County, Texas

ANY PROVISION HEREIN WHICH RESTRICTS THE SALE, RENTAL, OR USE OF THE DESCRIBED REAL PROPERTY BECAUSE OF COLOR OR RACE IS INVALID AND UNENFORCEABLE UNDER FEDERAL LAW.
THE STATE OF TEXAS
COUNTY OF HARRIS
I hereby certify that this Instrument was FILED in File Number Sequence on the date and at the time stamped hereon by me; and was duly RECORDED, in the Official Public Records of Real Property of Harris County, Texas on

OCT 12 2001

Beverly B. Kaufman
COUNTY CLERK
HARRIS COUNTY, TEXAS

APPENDIX E

NOTICE TO THE PUBLIC REGARDING THE FIVE-YEAR REVIEW

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HIGHLANDS / CROSBY STAR COURIER

P.O. BOX 405
Highlands, TX. 77562
281-328-9605

PUBLISHER'S AFFIDAVIT

FEB 29 2016

STATE OF TEXAS

COUNTY OF HARRIS

Before me, the undersigned authority, on this day personally appeared Ms. Julieta Pauta, who being by me duly sworn, deposes and says that she is the editor of the HIGHLANDS STAR CROSBY COURIER; that said newspaper is regularly published in Harris County, Texas and generally circulated in Harris County, Texas; and that the attached notice was published in said newspaper on the following dates, to wit:

02-24-16
(Dates)

(Signed)

Subscribed and sworn to me this the 24th day of February, 2016, to certify which witness my hand and seal of office

MEI ING L. HOFFMAN
Notary Public, State of Texas
Comm. Expires 02-05-2020
Notary ID 126400946

(SEAL)

Notary Public in and for the
State of Texas

Mei Hoffman
Print or Type Name of Notary Public

My Commission Expires 02/05/2020

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CEMETERY
Lots for sale, San Jacinto Memorial Park, East Beltway 8/I-10. St. Hyacinch, lots 36 (1-4) 713-666-2223.
+12

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Community Center
Backdraft Rest.
Woodforest Bank
Conoco Station
Post Office (outside)

CROSBY:
Library
Community Center
Race Track
Artan's Market
Kroger's
Community Bank (2)

LEGAL NOTICE

SIKES DISPOSAL PITS SUPERFUND SITE
PUBLIC NOTICE
U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 6
FIFTH FIVE-YEAR REVIEW OF SITE REMEDY
FEBRUARY 2016

The U.S. Environmental Protection Agency Region 6 (EPA) has begun the fifth five-year review of the remedy for the Sikes Disposal Pits Superfund Site (Site) in Harris County, Texas. The review will evaluate if the remedy continues to protect human health and the environment.

The excavation and incineration of contaminated materials and soil restoration were completed in June 1994. However, the ground water remains contaminated and the sampling program will continue until contaminated concentrations are below the health based criteria. The fourth review for the Site was completed in September 2011.

The 185-acre Sikes Disposal Pits Site is located about two miles southwest of the City of Crosby, immediately north of old U.S. Highway 90, and roughly 20 miles northeast of Houston. The Site was used as a waste depository from the early 1960s to 1967. During the period, a variety of chemical wastes from area petrochemical industries were deposited on-site in several sand pits.

Once completed, the results of the five-year review will be made available to the public at the following information repository:

Crosby Branch Library
135 Hare Street
Crosby, Texas 77532
(281) 328-3535

Information about the Sikes Disposal Pits Superfund Site is also available on the internet at:

www.epa.gov/superfund/sikes-disposal-pits

For more information about the Site, contact Raji Josiam, EPA Remedial Project Manager, at (214) 665-8529, 1-800-533-3508 (toll free), or by e-mail at Josiam.Raji@epa.gov. All media inquiries should be directed to the EPA Press Office at (214) 665-2200.

STAR-COURIER is on the Internet & your Smart Phone www.starcouriernews.com

LEGAL NOTICE

Channelview ISD Property Foreclosure Auction; March 1, 2016 at 10:00 a.m.; Bayou City Event Center at 9401 Knight Rd, Houston, TX 77045; LTS 2 & 10, BLK 12, SAN JACINTO RIVER ESTATES 1; HCAD # 0681130120002; Property Address: 17704 MEADOWBROOK DR CHANNELVIEW TX 77530; Opening Bid: $10,300.00; call 832.777.3373 for more information.

"Proposals will be received by the Galena Park Independent School District until 10:00 a.m., March 29, 2016 for FUNDRAISING ITEMS RFP 16-014. At that time proposals will be opened at the GPISD Admin Bldg. located at 14705 Woodforest Blvd., Houston, TX 77015. Additional information may be obtained by contacting Kristi Helton at 832-386-1008 or on our web-site: http://galenaparkisd.com/purchasing_currentbids. The Galena Park ISD reserves the right to reject any or all proposals."

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APPENDIX F

INTERVIEW FORM

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SUPERFUND FIVE-YEAR REVIEW SITE SURVEY		
Site Name: Sikes Disposal Pits Superfund Site		**EPA ID No.:** TXD980513956
Location: Crosby, Houston County, Texas		**Date:** March 3, 2016
Contact Made By:		
Name: Raji Josiam	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: 214-665-8529 **E-Mail:** Josiam.Raji@epa.gov	**Street Address:** 1445 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: April Ballweg	**Title:** Project Manager	**Organization:** EA Engineering, Science, and Technology, Inc., PBC
Telephone No.: 972-459-5019 **E-Mail:** aballweg@eaest.com	**Street Address:** 405 S. Highway 121 Bypass, Suite C-100 **City, State, Zip:** Lewisville, Texas 75067	
Individual Contacted:		
Name: Lam Tran	**Title:** Project Manager	**Organization:** TCEQ
Telephone No.: **E-Mail Address:** 713-767-3559	**Street Address:** 5425 Polk Street **City, State, Zip:** Houston, Texas 77023	

Survey Questions

The purpose of the five-year review is to evaluate the implementation and performance of the remedy, and to confirm that human health and the environment continue to be protected by the remedial actions that have been performed at the site. This interview is being conducted as a part of the fifth five-year review for the Sikes Disposal Pits Superfund Site. ***Should you choose to respond, please return your survey form to April Ballweg at EA Engineering, Science, and Technology, Inc., PBC via e-mail or U.S. Postal Service by 11 March 2016.*** *The scope of the review is from 2011 to the present.*

1. What is your general impression of the work conducted at the site since the fourth Five-Year Review period (since September 2011)?

TCEQ conducted all tasks recommended by the fourth Five-Year Review. Primarily, the groundwater and surface water monitoring were conducted in accordance with the updated Operation and Maintenance Plan.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY	
Site Name: Sikes Disposal Pits Superfund Site	**EPA ID No.:** TXD980513956
Location: Crosby, Houston County, Texas	**Date:** March 3, 2016

2. From your perspective, what effects have site operations had on the surrounding community?

There has not been sufficient contact with the surrounding community to adequately comment. The Love's Marina, located southwest of the site, did change land ownership approximately in 2012 and the new marina operator has been cooperative during the fifth five-year review period.

3. During this review period, are you aware of any community concerns regarding the site or its operation and administration? If so, please provide details.

A customer of Down South Offroad, an on-site park for off-road motored vehicles, identified the site as a Superfund site and called TCEQ in 2015 for information. The new owner of the Love's Marina was aware of the Superfund site prior to the marina purchase and has occasionally asked TCEQ when the groundwater contamination will be detected below the action level.

4. Are you aware of any events, incidents, or activities at the site during this review period, such as vandalism, trespassing, or emergency responses from local authorities? If so, please provide details.

The TCEQ conducted site visits approximately twice a year and vandalism was identified at monitoring well MW-19 in June 2013. The chain-link fence and gate was repaired in July 2013 to restore the security of the monitoring well.

SUPERFUND FIVE-YEAR REVIEW SITE SURVEY	
Site Name: Sikes Disposal Pits Superfund Site	**EPA ID No.:** TXD980513956
Location: Crosby, Houston County, Texas	**Date:** March 3, 2016

5. Do you feel well informed about the site's activities and progress? If not, please indicate how you would like to be informed about the site activities – for example, by e-mail, regular mail, fact sheets, meetings, etc.

Yes

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

The TCEQ recommends that monitoring wells at the site that are not being sampled on a semi-annual basis should be plugged and abandoned.

APPENDIX G

REGRESSION ANALYSIS FOR SELECTED WELL-ANALYTE PAIRS

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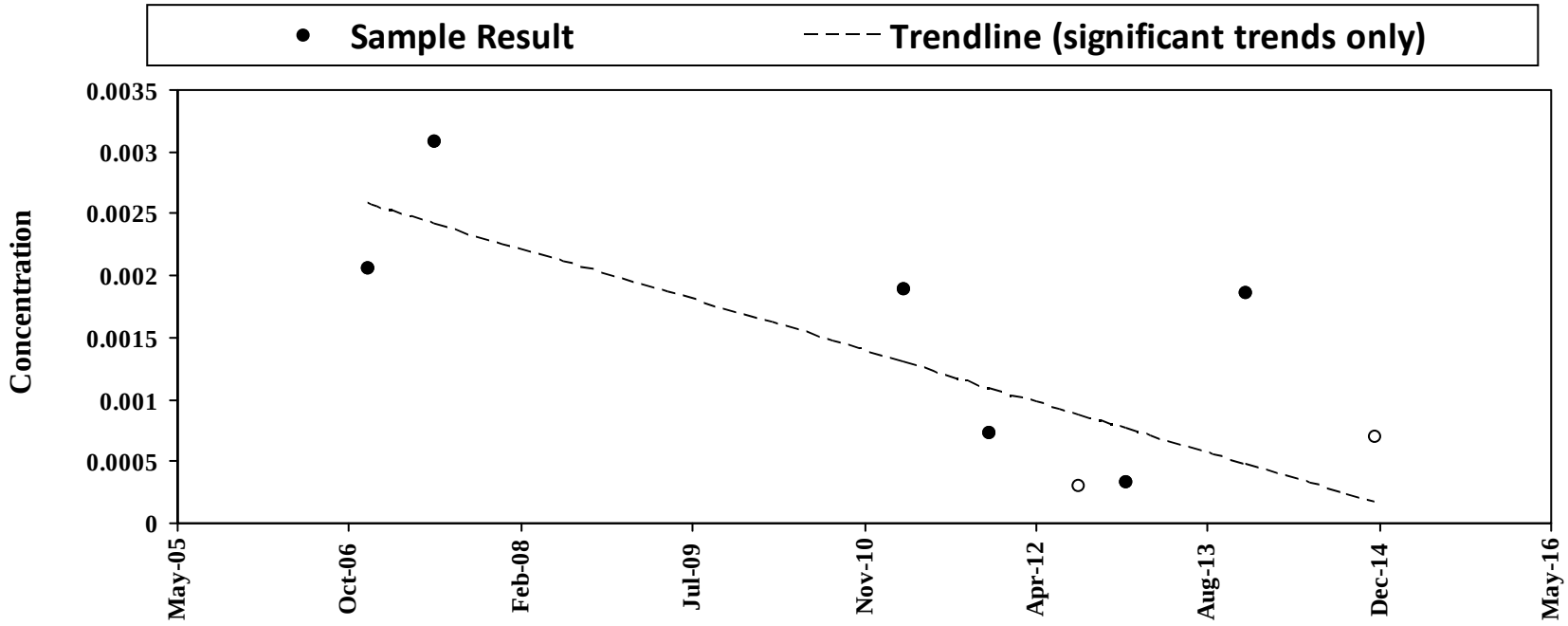
GW-15



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-15	8	75%	-17	0.047	Decreasing	-0.000294

* Nondetects greater than the maximum detected value are excluded from trend analysis.

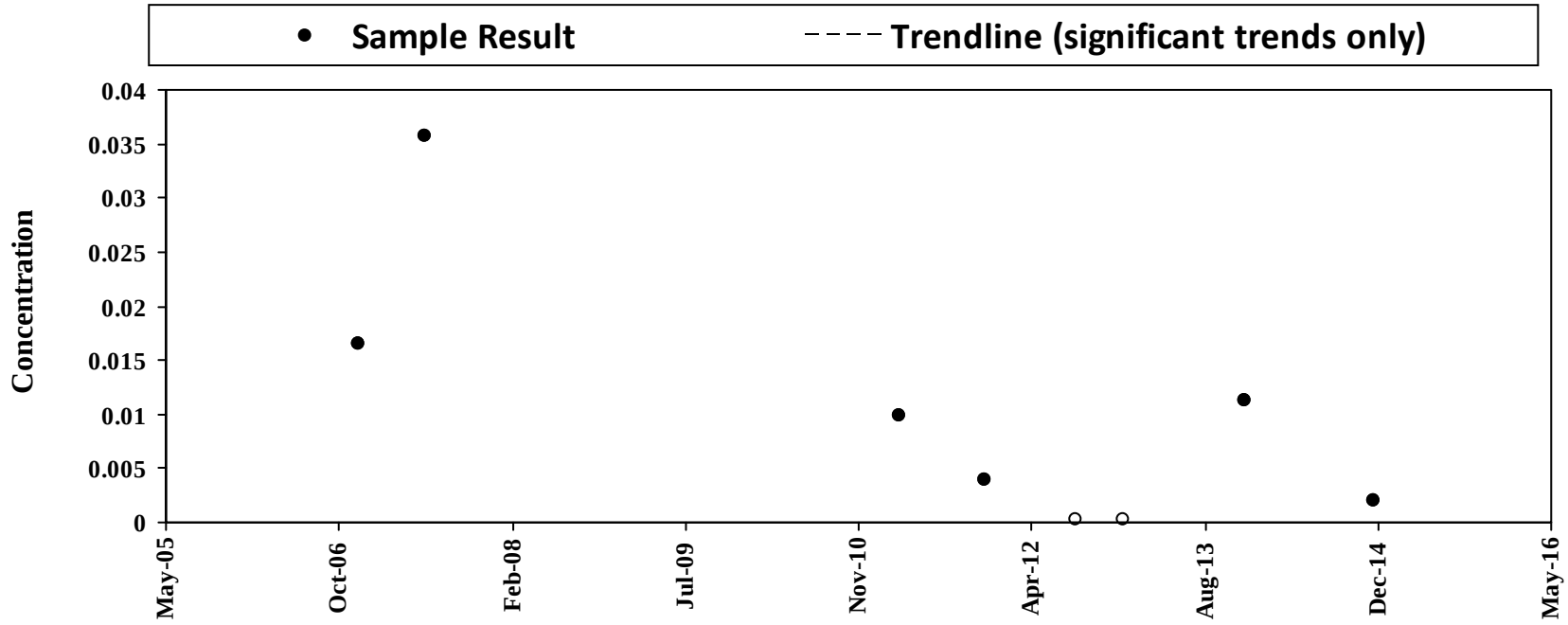
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Beryllium (mg/l) at Well GW-15

Sikes Five-Year Review

Figure G-1

GW-15



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-15	8	75%	-13	0.143	NST	-0.00265

* Nondetects greater than the maximum detected value are excluded from trend analysis.

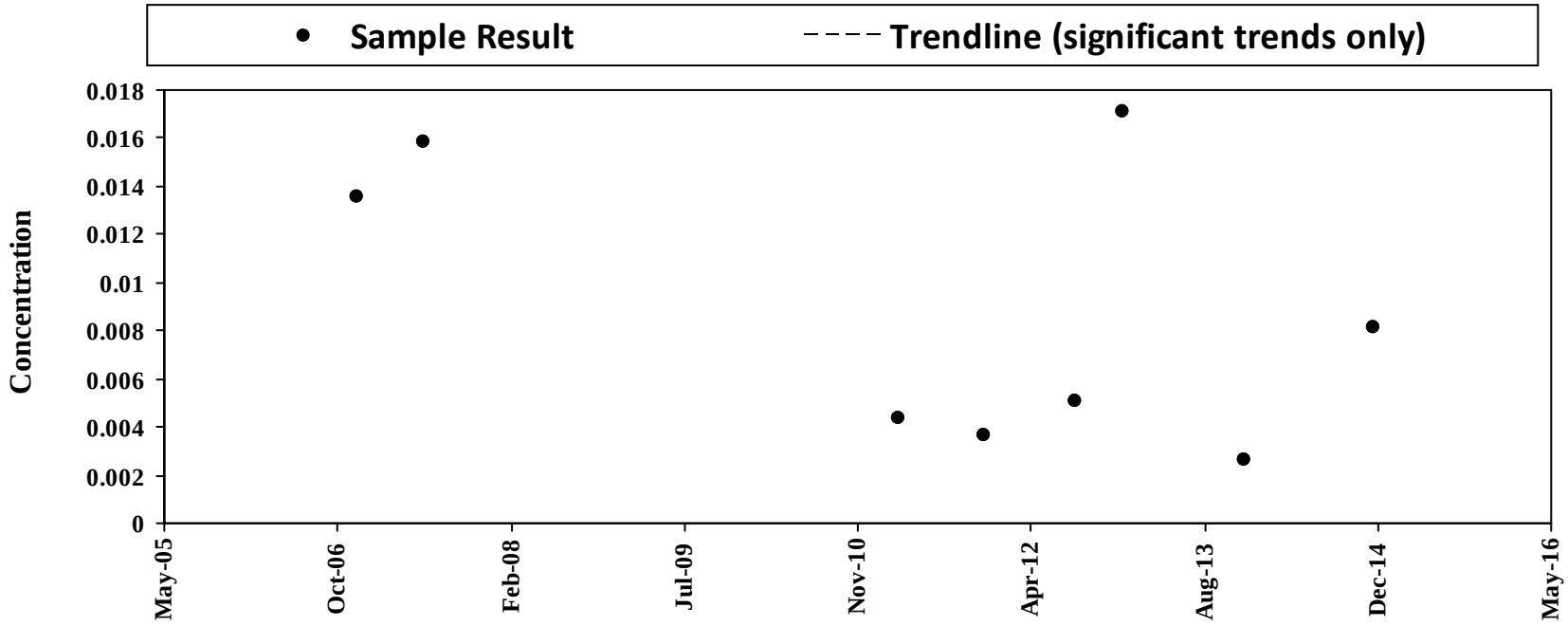
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Lead (mg/l) at Well GW-15

Sikes Five-Year Review

Figure G-2

GW-15



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-15	8	100%	-4	0.72	NST	-0.000661

* Nondetects greater than the maximum detected value are excluded from trend analysis.

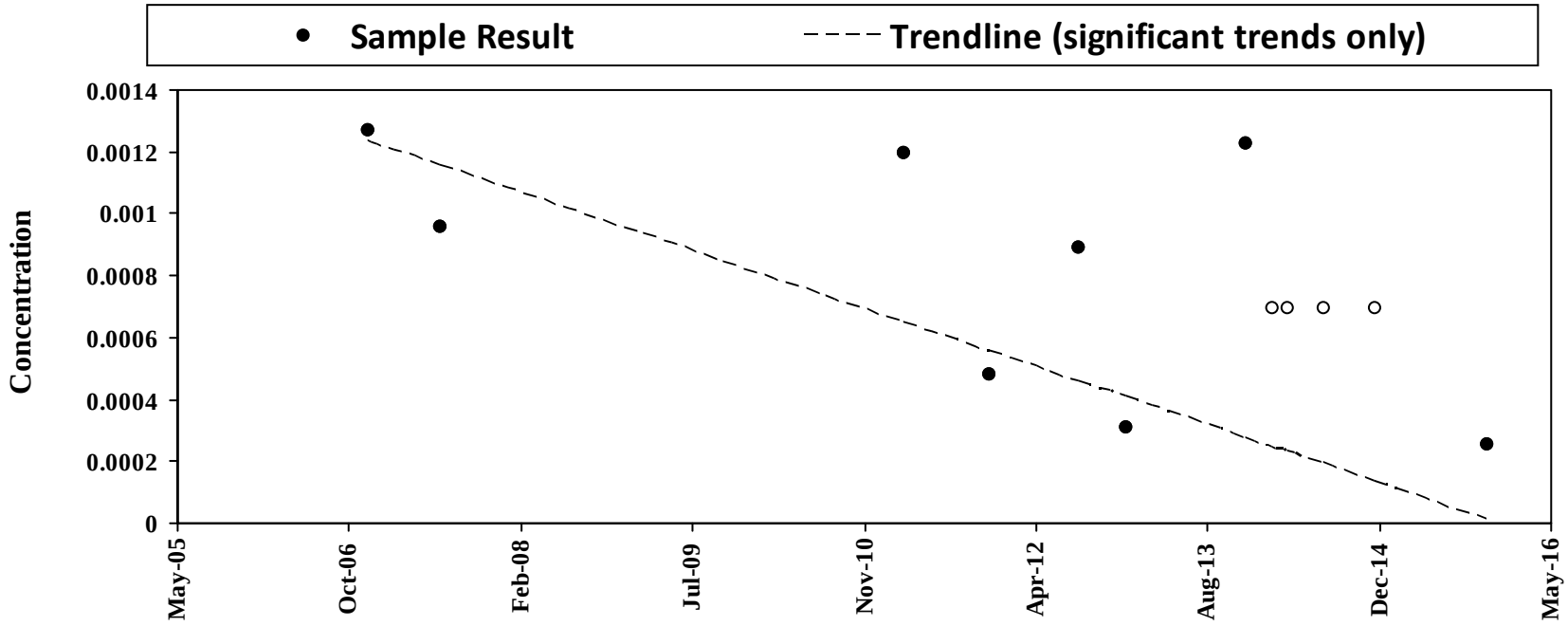
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Nickel (mg/l) at Well GW-15

Sikes Five-Year Review

Figure G-3

GW-18



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-18	12	67%	-31	0.038	Decreasing	-0.000122

* Nondetects greater than the maximum detected value are excluded from trend analysis.

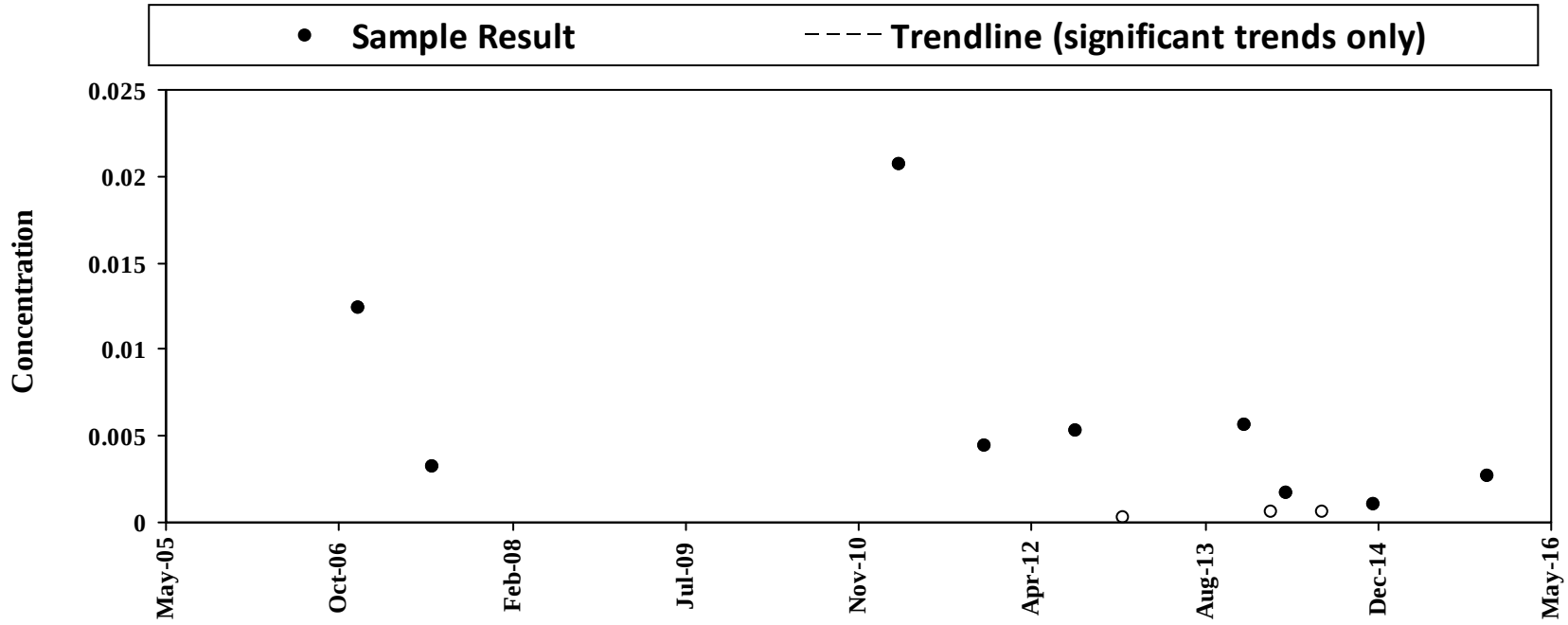
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Beryllium (mg/l) at Well GW-18

Sikes Five-Year Review

Figure G-4

GW-18



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-18	12	75%	-25	0.101	NST	-0.00111

* Nondetects greater than the maximum detected value are excluded from trend analysis.

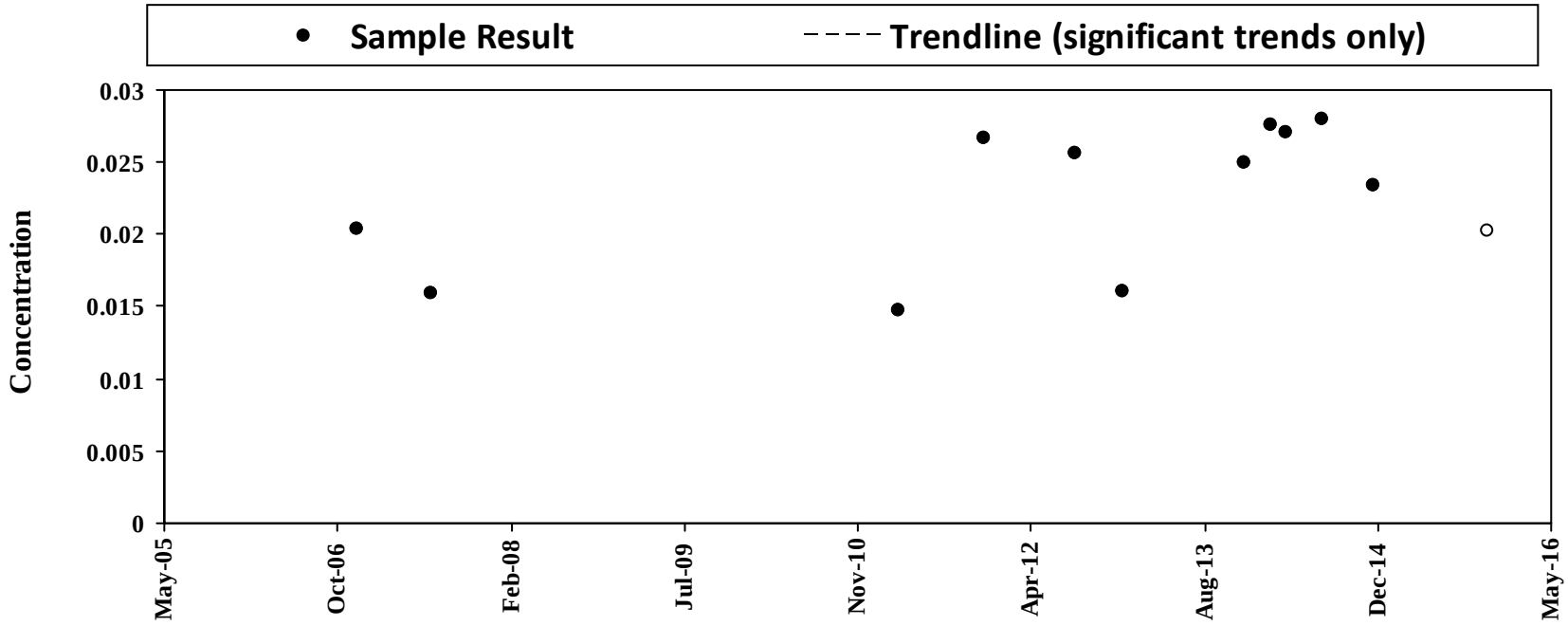
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Lead (mg/l) at Well GW-18

Sikes Five-Year Review

Figure G-5

GW-18



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-18	12	92%	14	0.38	NST	0.000573

* Nondetects greater than the maximum detected value are excluded from trend analysis.

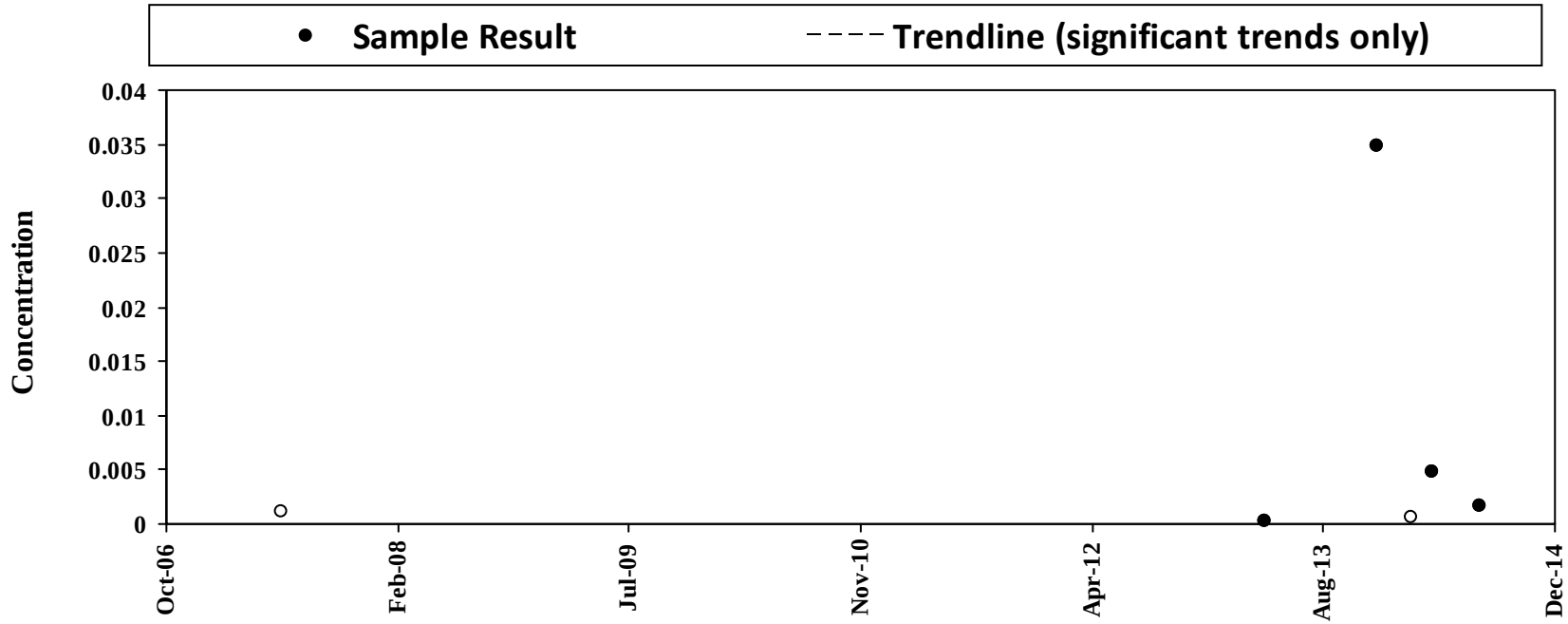
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Nickel (mg/l) at Well GW-18

Sikes Five-Year Review

Figure G-6

GW-23



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-23	6	67%	4	0.595	NST	0.00024

* Nondetects greater than the maximum detected value are excluded from trend analysis.

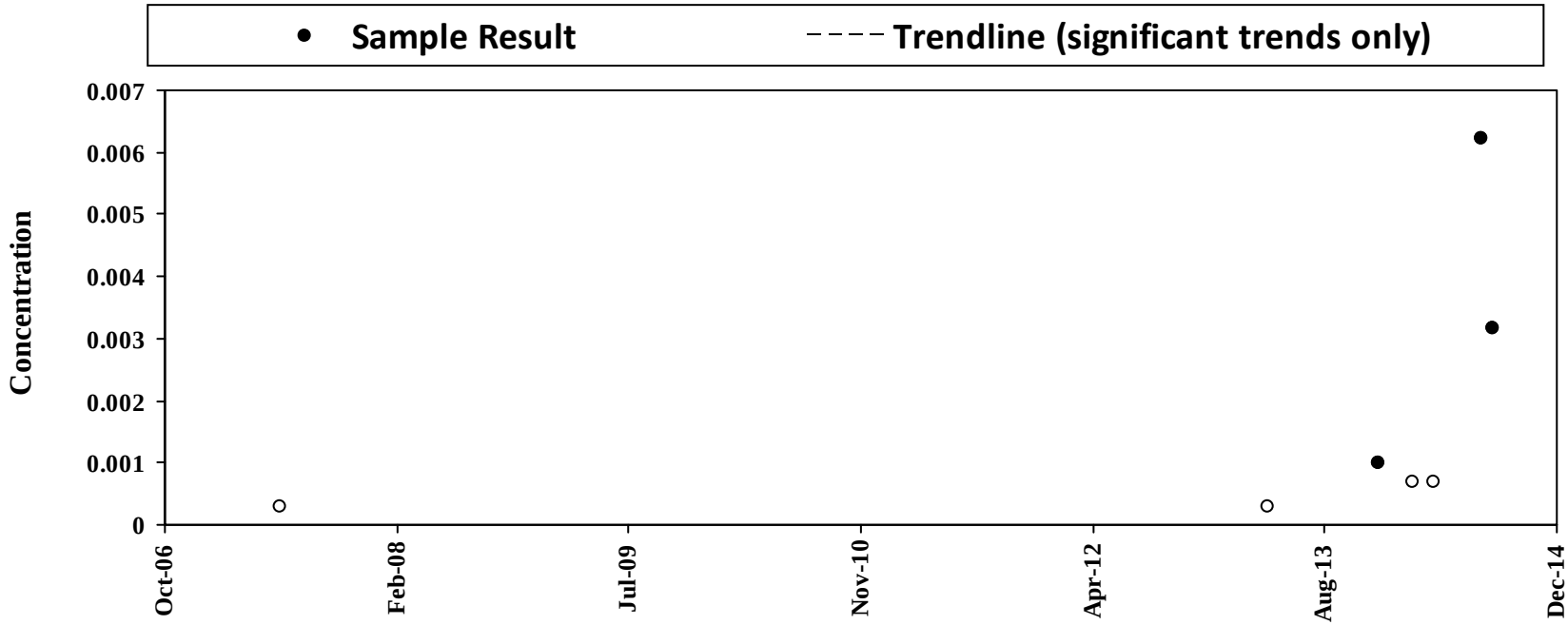
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Lead (mg/l) at Well GW-23

Sikes Five-Year Review

Figure G-7

GW-27



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-27	7	43%	9	0.238	NST	0.000445

* Nondetects greater than the maximum detected value are excluded from trend analysis.

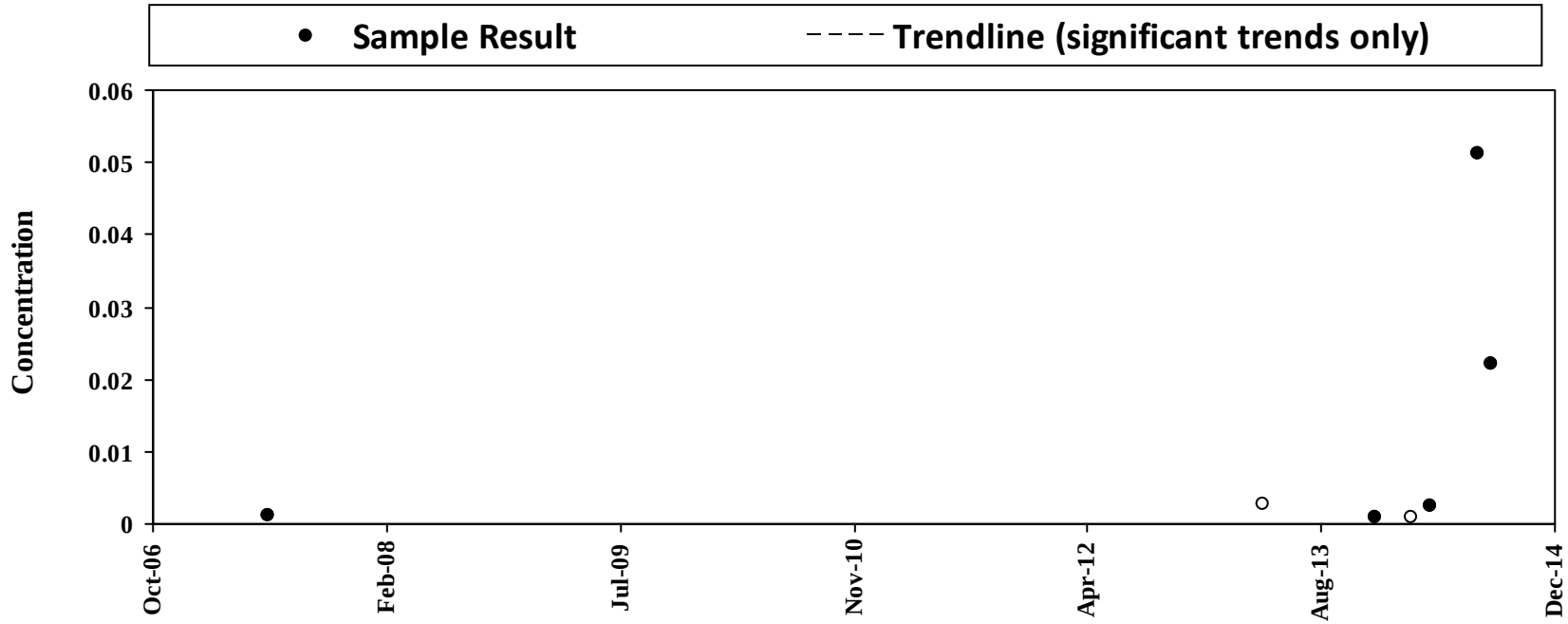
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Beryllium (mg/l) at Well GW-27

Sikes Five-Year Review

Figure G-8

GW-27



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-27	7	71%	9	0.238	NST	0

* Nondetects greater than the maximum detected value are excluded from trend analysis.

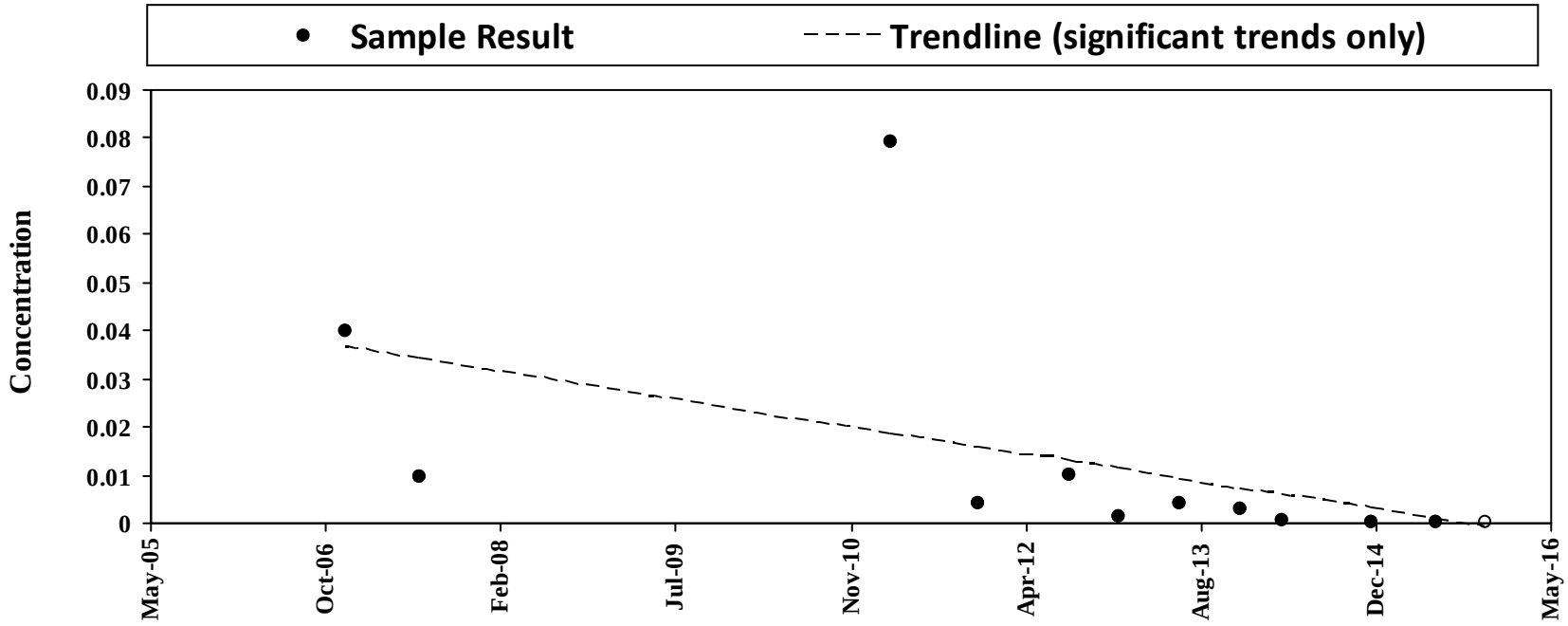
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Nickel (mg/l) at Well GW-27

Sikes Five-Year Review

Figure G-9

GW-28



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-28	12	92%	-50	0	Decreasing	-0.00184

* Nondetects greater than the maximum detected value are excluded from trend analysis.

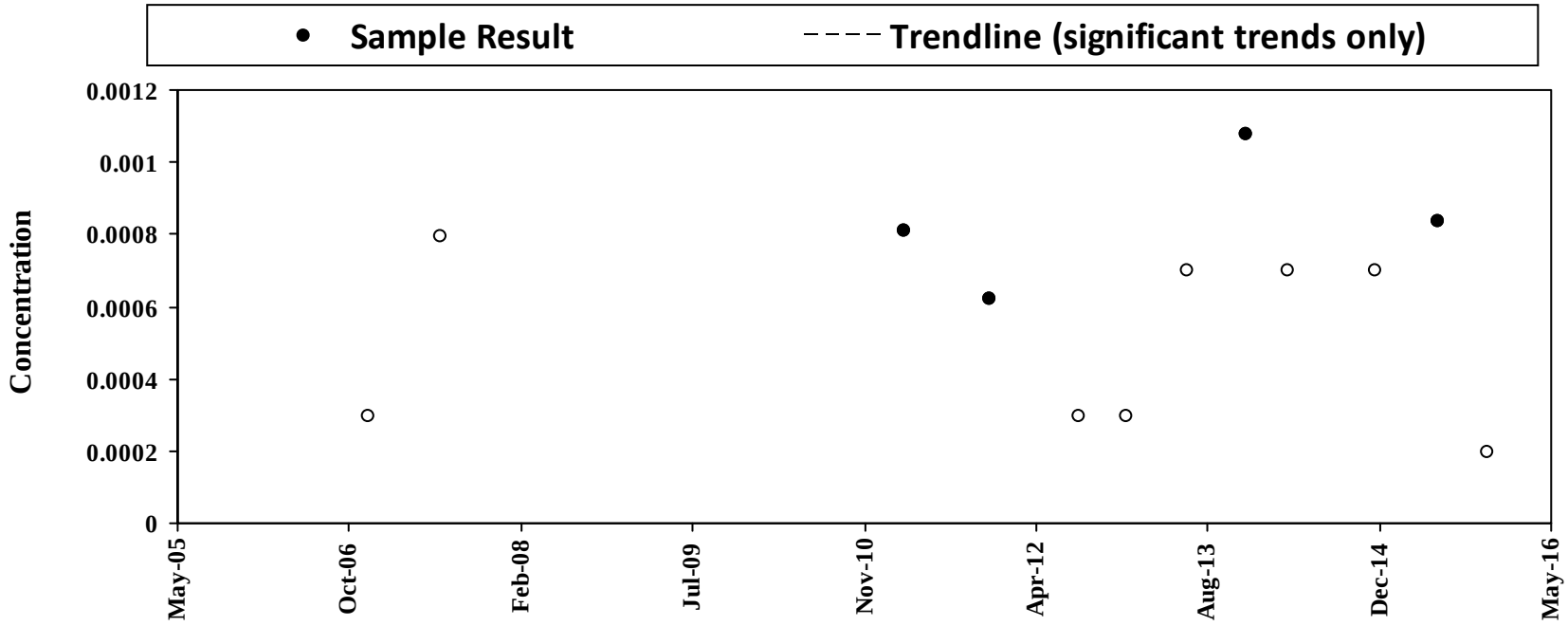
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Benzene (mg/l) at Well GW-28

Sikes Five-Year Review

Figure G-10

GW-28



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-28	12	33%	6	0.738	NST	0

* Nondetects greater than the maximum detected value are excluded from trend analysis.

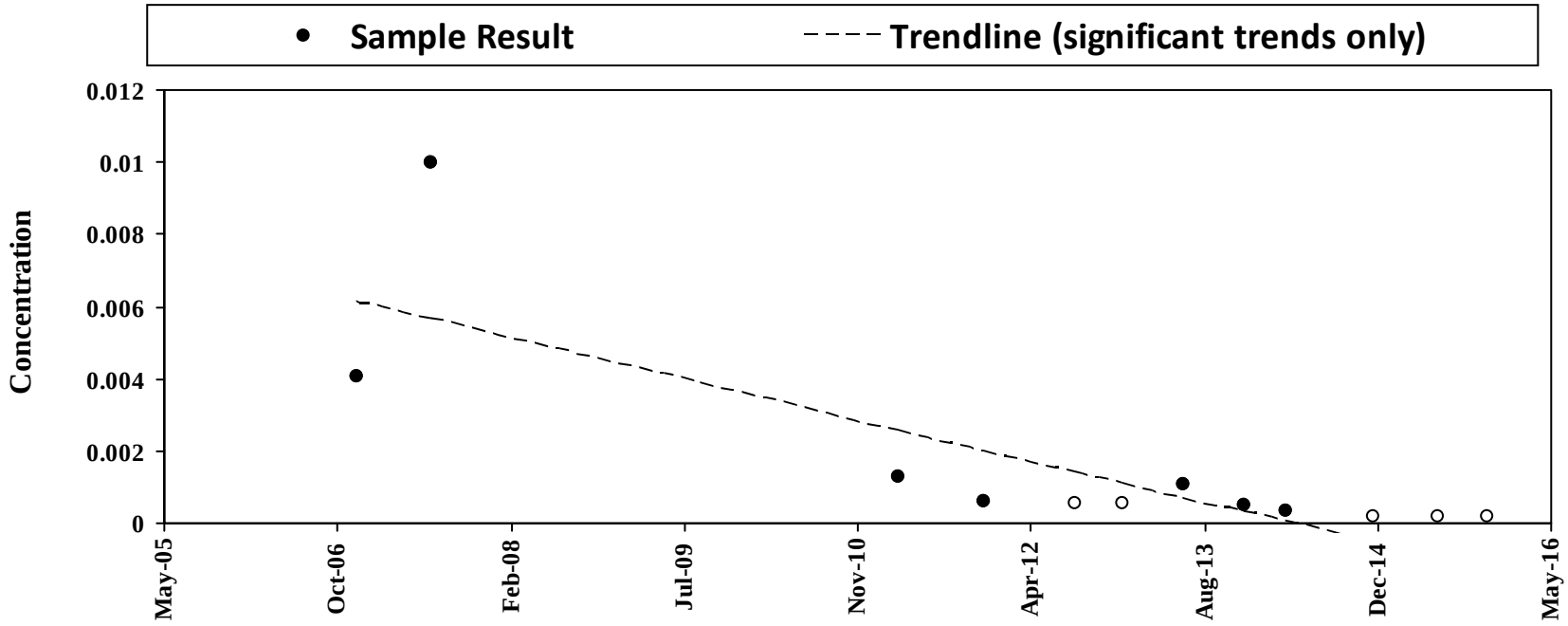
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Beryllium (mg/l) at Well GW-28

Sikes Five-Year Review

Figure G-11

GW-28



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-28	12	58%	-37	0.011	Decreasing	-0.000327

* Nondetects greater than the maximum detected value are excluded from trend analysis.

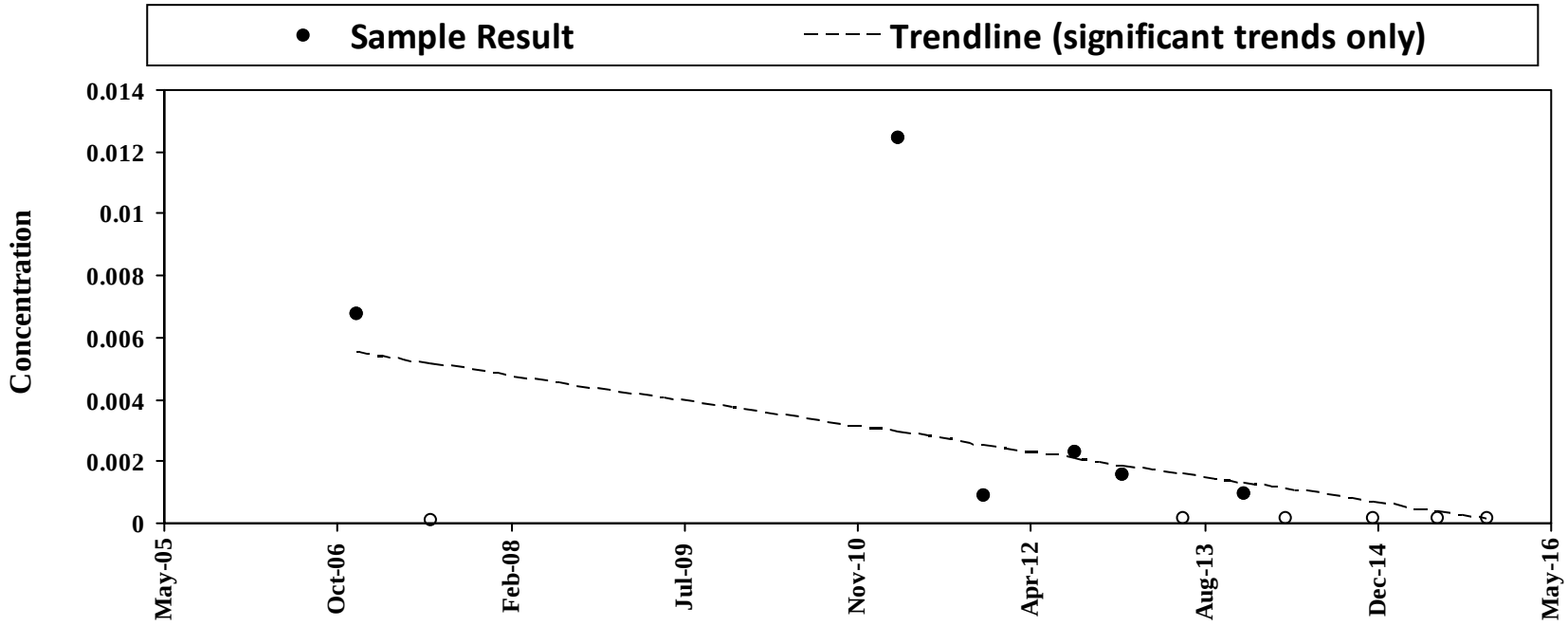
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Trichloroethylene (mg/l) at Well GW-28

Sikes Five-Year Review

Figure G-12

GW-28



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-28	12	50%	-31	0.038	Decreasing	-0.00062

* Nondetects greater than the maximum detected value are excluded from trend analysis.

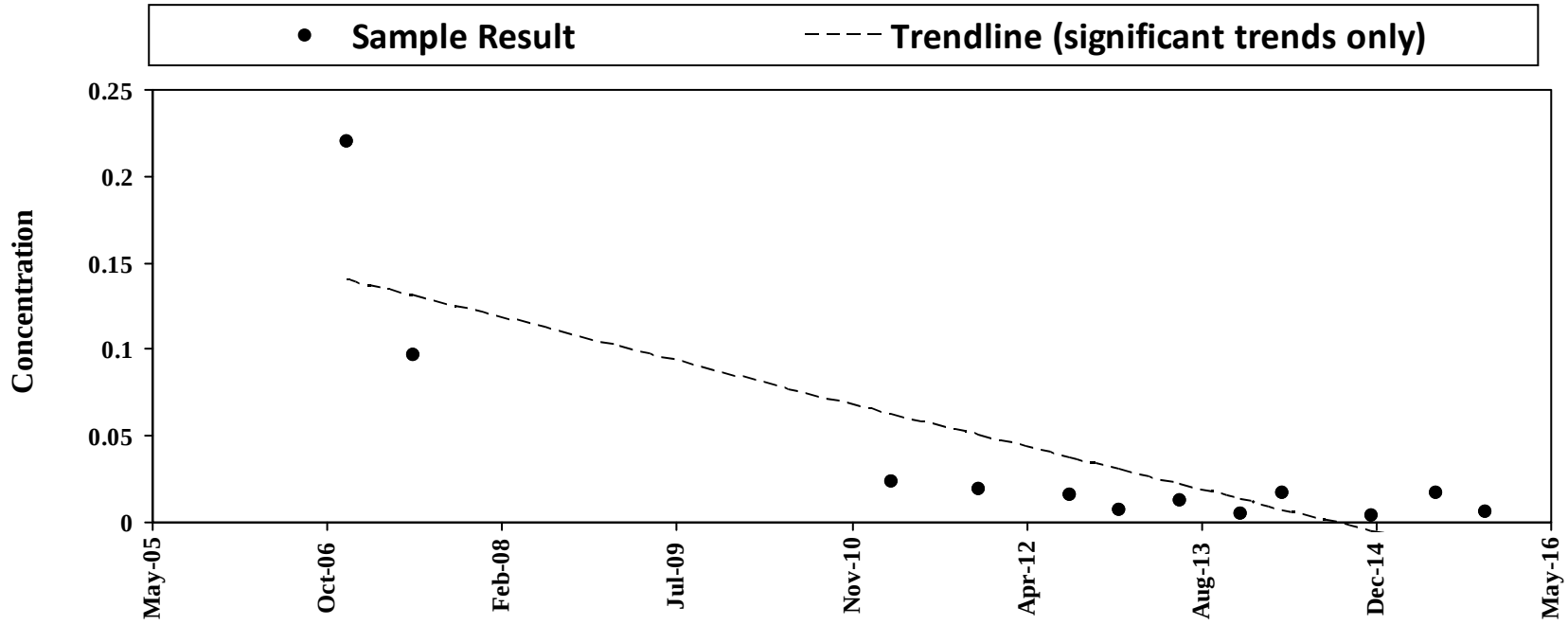
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Vinyl chloride (mg/l) at Well GW-28

Sikes Five-Year Review

Figure G-13

GW-30



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-30	12	100%	-41	0.005	Decreasing	-0.0053

* Nondetects greater than the maximum detected value are excluded from trend analysis.

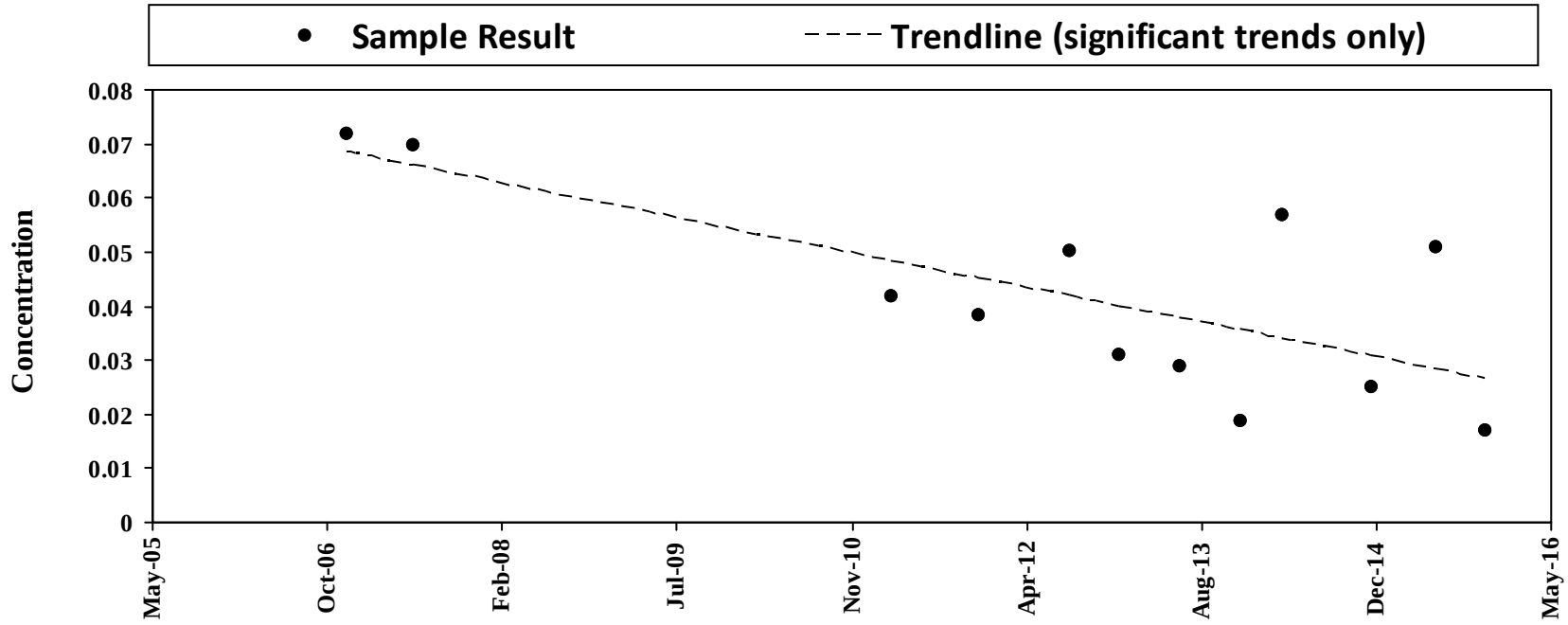
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Benzene (mg/l) at Well GW-30

Sikes Five-Year Review

Figure G-14

GW-30



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-30	12	100%	-34	0.02	Decreasing	-0.00518

* Nondetects greater than the maximum detected value are excluded from trend analysis.

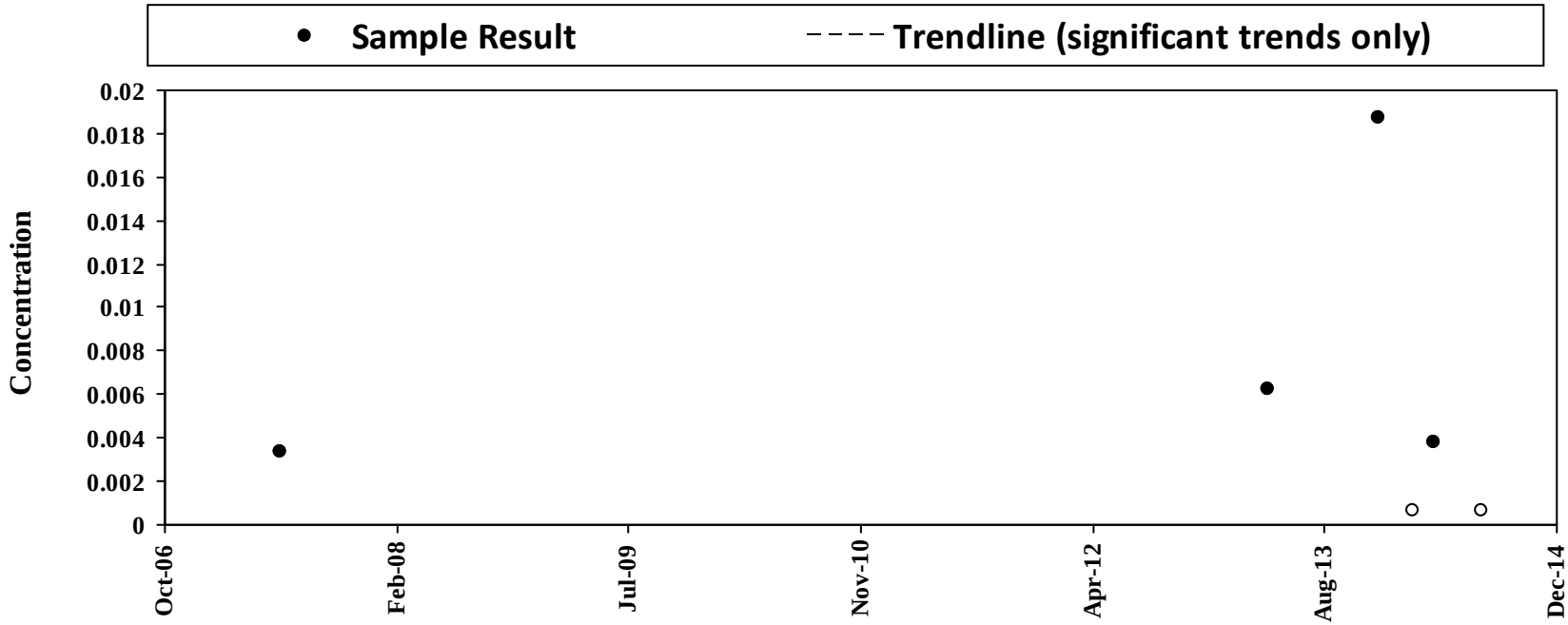
** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Vinyl chloride (mg/l) at Well GW-30

Sikes Five-Year Review

Figure G-15

GW-34



Note: Open symbols denote nondetect results.

Results of Mann-Kendall Test for Trend

Well	N	FOD	S	P < |S|	Trend	Sen Slope **
GW-34	6	67%	-4	0.595	NST	-0.000505

* Nondetects greater than the maximum detected value are excluded from trend analysis.

** Sen Slope Units = MG/L Per Year

Groundwater Time Series Trend Plot of Lead (mg/l) at Well GW-34

Sikes Five-Year Review

Figure G-16

TABLE G-1. SUMMARY STATISTICS AND TREND RESULTS

Matrix	Well	Analyte	Units	First Event	Last Event	No. of Results	FOD	Detected Results Summary					Mann-Kendall Test		
								Minimum	Maximum	Mean	Median	SD	Mann-Kendall S	Two-Tailed P-Value	Mann-Kendall Trend
GW	GW-15	Beryllium	mg/l	12/5/2006	12/11/2014	8	75%	0.00033	0.00309	0.00167	0.00189	0.000994	-17	0.05	Decreasing
GW	GW-15	Lead	mg/l	12/5/2006	12/11/2014	8	75%	0.00217	0.0358	0.0133	0.0107	0.0122	-13	0.14	NST
GW	GW-15	Nickel	mg/l	12/5/2006	12/11/2014	8	100%	0.00264	0.0171	0.00882	0.00663	0.00586	-4	0.72	NST
GW	GW-18	Beryllium	mg/l	12/5/2006	11/4/2015	12	67%	0.000259	0.00127	0.000827	0.000929	0.000418	-31	0.04	Decreasing
GW	GW-18	Lead	mg/l	12/5/2006	11/4/2015	12	75%	0.00104	0.0207	0.00637	0.00451	0.00632	-25	0.10	NST
GW	GW-18	Nickel	mg/l	12/5/2006	11/4/2015	12	92%	0.0148	0.028	0.0228	0.025	0.00509	14	0.38	NST
GW	GW-23	Lead	mg/l	6/13/2007	7/15/2014	6	67%	0.000329	0.035	0.0105	0.00326	0.0165	4	0.60	NST
GW	GW-27	Beryllium	mg/l	6/13/2007	8/11/2014	7	43%	0.00102	0.00623	0.00348	0.00319	0.00262	9	0.24	NST
GW	GW-27	Nickel	mg/l	6/13/2007	8/11/2014	7	71%	0.00103	0.0513	0.0157	0.00271	0.0218	9	0.24	NST
GW	GW-28	Benzene	mg/l	12/5/2006	11/4/2015	12	92%	0.00043	0.0794	0.014	0.00416	0.0245	-50	0.00	Decreasing
GW	GW-28	Beryllium	mg/l	12/5/2006	11/4/2015	12	33%	0.000623	0.00108	0.000838	0.000825	0.000188	6	0.74	NST
GW	GW-28	Trichloroethylene	mg/l	12/5/2006	11/4/2015	12	58%	0.00039	0.01	0.00257	0.0011	0.00351	-37	0.01	Decreasing
GW	GW-28	Vinyl chloride	mg/l	12/5/2006	11/4/2015	12	50%	0.00093	0.0125	0.00419	0.00195	0.00463	-31	0.04	Decreasing
GW	GW-30	Benzene	mg/l	12/5/2006	11/4/2015	12	100%	0.0048	0.22	0.0376	0.0174	0.0626	-41	0.01	Decreasing
GW	GW-30	Vinyl chloride	mg/l	12/5/2006	11/4/2015	12	100%	0.017	0.072	0.0418	0.0402	0.0186	-34	0.02	Decreasing
GW	GW-34	Lead	mg/l	6/12/2007	7/15/2014	6	67%	0.00338	0.0188	0.00807	0.00504	0.00727	-4	0.60	NST

Notes:
FOD = Frequency of detection.
GW = groundwater.
mg/l = milligrams per liter.
NST = No significant trend.
SD = Standard deviation.

APPENDIX H

SITE INSPECTION CHECKLIST

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FIVE-YEAR REVIEW SITE VISIT CHECKLIST

I. SITE INFORMATION

Site Name: Sikes Disposal Pits Superfund Site	**Date of Inspection:** 3/2/2016
Location and Region: Crosby, Harris County, Texas	**EPA ID:** TXD980513956
Agency, office, or company leading the five-year review: U.S. Environmental Protection Agency, Region 6	**Weather/temperature:** Clear skies with high of 70°F, winds SSE at ~ 13 mph.

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☒ Access controls (Fencing around wells)
- ☒ Institutional controls
- ☐ Ground water pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other (Natural flushing of ground water in upper aquifer)

Attachments: ☒ Inspection team roster attached ☒ Site map attached (Figure C-2 of report)

II. INTERVIEWS (Check all that apply)

1. O&M Site Manager Marc Viola (Name) Project Manager, CB&I (Title) _____ (Date)

Interviewed: ☐ by mail ☐ at office ☐ by phone Phone no. _____

Problems, suggestions: ☐ Report attached Received survey on 4 April 2016; authorization to publish it not received, therefore not included in the FYR Report.

2. O&M Staff _____ (Name) _____ (Title) _____ (Date)

Interviewed: ☐ by mail ☐ at office ☐ by phone Phone no. _____

Problems, suggestions: ☐ Report attached

3. Local regulatory authorities and response agencies (i.e.; State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.). Fill in all that apply.

Agency Texas Commission on Environmental Quality

Contact Lam Tran (Name) Project Manager (Title) _____ (Date) (713) 767-3559 (Phone no.)

Problems, suggestions: ☒ Report attached Received on 28 March 2016

Agency _____

Contact _____ (Name) _____ (Title) _____ (Date) (_____) (Phone no.)

Problems, suggestions: ☐ Report attached _____

4. Other interviews (optional): ☐ Report attached to Five-Year Review Report

Sikes Property Owner – No Survey Provided

Love's Marina Owner – No Survey Provided

Harris County Commission of Precinct 2 – No Survey Provided

Harris County Precinct 2 Infrastructure Director – No Survey Provided

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. O&M Documents

☒ O&M manual (long term monitoring plan)	☒ Readily available	☒ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☒ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Stored at local CB&I (TCEQ's subcontractor) office

2. Site-Specific Health and Safety Plan	☒ Readily available	☒ Up to date	☐ N/A
☐ Contingency plan/emergency response plan	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Team brought on-site during inspection; stored at local office for team subcontractor

3. O&M and OSHA Training Records	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Staff required to maintain 8-hour OSHA refresher courses annually

4. Permits and Service Agreements

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5. Gas Generation Records	☐ Readily available	☐ Up to date	☒ N/A
6. Settlement Monument Records	☐ Readily available	☐ Up to date	☒ N/A
7. Ground Water Monitoring Records	☒ Readily available	☒ Up to date	☐ N/A
8. Leachate Extraction Records	☐ Readily available	☐ Up to date	☒ N/A

9. Discharge Compliance Records

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10. Daily Access/Security Logs	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

IV. O&M COSTS

1. O&M Organization

☐ State in-house ☒ Contractor for State ☐ PRP in-house

☐ Contractor for PRP ☐ Other _____

2. O&M Cost Records (Not Available [N/A])

☐ Readily available ☐ Up to date ☒ Funding mechanism/agreement in place

☐ Original O&M cost estimate ☐ Breakdown attached

Total annual cost by year for review period, if available **(N/A)**

Date	Date	Total Cost		
From N/A	to N/A	$	-	☐ Breakdown attached
From N/A	to N/A	$	-	☐ Breakdown attached
From N/A	to N/A	$	-	☐ Breakdown attached
From N/A	to N/A	$	-	☐ Breakdown attached
From N/A	to N/A	$	-	☐ Breakdown attached
Total Invoiced Amount: $ N/A			-	☐ Breakdown attached

3. Unanticipated or Unusually High O&M Costs During Review Period

N/A

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. Fencing damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Continue repairing on an as need basis; main gate showed damage of chain link fence fabric which may allow trespasser access, however, gates and fencing around monitoring wells were observed to be in good condition during the site visit.

B. Other Access Restrictions

1. Signs and other security measures ☐ Location shown on site map ☐ N/A

Remarks: TCEQ signs on perimeter fencing at each well location were observed; some signs faded or missing information or identifying TNRCC, and in need of repair or replacement.

C. Institutional Controls

1. Implementation and enforcement

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by) Inspections during O&M site visits.

Frequency Per the O&M Plan

Responsible party/agency TCEQ

Contact Lam Tran Project Manager 713-767-3559

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

2. Adequacy ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: The previous five-year review identified that there are three deed notices in place however they do not cover the site in its entirety. On 10/5/2015, TCEQ sent a letter to EPA stating that deed notices were not necessary for the Parker or Anderson properties based on quarterly groundwater results. EPA concurred with TCEQ's assessment regarding deed notices on the Parker and Anderson properties on 10/19/2015.

D. General

1. Vandalism/trespassing ☐ Location shown on site map ☒ No vandalism evident

Remarks:

2. Land use changes onsite ☒ N/A

Remarks:

3. Land use changes offsite ☒ N/A

Remarks:

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. Roads damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks:

B. Other Site Conditions

Remarks:

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. Settlement (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent _____ Depth _____
Remarks: _____

2. Cracks ☐ Location shown on site map ☐ Cracking not evident
Lengths _____ Widths _____ Depths _____
Remarks: _____

3. Erosion ☐ Location shown on site map ☐ Erosion not evident
Areal extent _____ Depth _____
Remarks: _____

4. Holes ☐ Location shown on site map ☐ Holes not evident
Areal extent _____ Depth _____
Remarks: _____

5. Vegetative Cover ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks: _____

6. Alternative Cover (armored rock, concrete, etc.) ☐ N/A
Remarks: _____

7. Bulges ☐ Location shown on site map ☐ Bulges not evident
Areal extent _____ Depth _____
Remarks: _____

8. Wet Areas/Water Damage ☐ Wet areas/water damage not evident

☐ Wet areas	☐ Location shown on site map	☐ Areal extent _____
☐ Ponding	☐ Location shown on site map	☐ Areal extent _____
☐ Seeps	☐ Location shown on site map	☐ Areal extent _____
☐ Soft subgrade	☐ Location shown on site map	☐ Areal extent _____

Remarks: _____

9. Slope Instability ☐ Slides ☐ Location shown on site map
☐ No evidence of slope instability Areal extent _____
Remarks: _____

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. Flows Bypass Bench ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

2. Bench Breached ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

3. Bench Overtopped ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, rip rap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. Settlement ☐ Location shown on site map ☐ No evidence of settlement

Areal extent _____ Depth _____

Remarks: _____

2. Material Degradation ☐ Location shown on site map ☐ No evidence of degradation

Material type _____ Areal extent _____

Remarks: _____

3. Erosion ☐ Location shown on site map ☐ No evidence of erosion

Areal extent _____ Depth _____

Remarks: _____

4. Undercutting ☐ Location shown on site map ☐ No evidence of undercutting

Areal extent _____ Depth _____

Remarks: _____

5. Obstructions Type _____

☐ No obstructions ☐ Location shown on site map

Areal extent _____ Size _____

Remarks: _____

6. Excessive Vegetative Growth Type _____

☐ No evidence of excessive growth ☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Areal extent _____

Remarks: _____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. Gas Vents ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

2. Gas Monitoring Probes
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

3. Monitoring Wells (within surface area of landfill)
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

4. Leachate Extraction Wells
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks: _____

5. Settlement Monuments ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. Gas Treatment Facilities
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs O&M
Remarks: _____

2. Gas Collection Wells, Manifolds, and Piping ☐ Good condition ☐ Needs O&M
Remarks: _____

3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs O&M ☐ N/A
Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. Outlet Pipes Inspected ☐ Functioning ☐ N/A
Remarks: _____

2. Outlet Rock Inspected ☐ Functioning ☐ N/A
Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. Siltation Areal extent _____ Size _____

☐ N/A ☐ Siltation not evident

Remarks: _____

_____

2. Erosion Areal extent _____ Depth _____

☐ Erosion not evident

Remarks: _____

_____

3. Outlet Works ☐ Functioning ☐ N/A

Remarks: _____

_____

4. Dam ☐ Functioning ☐ N/A

Remarks: _____

_____

H. Retaining Walls ☐ Applicable ☒ N/A

1. Deformations ☐ Location shown on site map ☐ Deformation not evident

Horizontal displacement _____ Vertical displacement _____

Rotational displacement _____

Remarks: _____

_____

2. Degradation ☐ Location shown on site map ☐ Degradation not evident

Remarks: _____

_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

1. Siltation ☐ Location shown on site map ☐ Siltation not evident

Areal extent _____ Depth _____

Remarks: _____

_____

2. Vegetative Growth ☐ Location shown on site map ☐ N/A

☐ Vegetation does not impede flow

Areal extent _____ Type _____

Remarks: _____

_____

3. Erosion ☐ Location shown on site map ☐ Erosion not evident

Areal extent _____ Depth _____

Remarks: _____

_____

4. Discharge Structure ☐ Functioning ☐ N/A

Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. Settlement ☐ Location shown on site map ☐ Settlement not evident

Areal extent _____ Depth _____

Remarks: _____

2. Performance Monitoring Type of monitoring _____

☐ Performance not monitored Frequency _____ ☐ Evidence of breaching

Head differential _____

Remarks: _____

IX. GROUND WATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Ground Water Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. Pumps, Wellhead Plumbing, and Electrical

☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A

Remarks: _____

2. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good condition ☐ Needs O&M

Remarks: _____

3. Spare Parts and Equipment

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. Collection Structures, Pumps, and Electrical

☐ Good condition ☐ Needs O&M

Remarks: _____

2. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good condition ☐ Needs O&M

Remarks: _____

3. Spare Parts and Equipment

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System ☐ Applicable ☒ N/A

1. Treatment Train (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon absorbers
☐ Filters _____
☐ Additive (e.g., chelation agent, flocculent) _____
☐ Others _____
☐ Good condition ☐ Needs O&M
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of ground water treated annually _____
☐ Quantity of surface water treated annually _____

Remarks: _____

2. Electrical Enclosures and Panels (Properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs O&M

Remarks: _____

3. Tanks, Vaults, Storage Vessels

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs O&M

Remarks: _____

4. Discharge Structure and Appurtenances

☐ N/A ☐ Good condition ☐ Needs O&M

Remarks: _____

5. Treatment Building(s)

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored

Remarks: _____

6. Monitoring Wells (Pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs O&M ☐ N/A

Remarks: _____

D. Monitored Natural Attenuation ☒ Applicable ☐ N/A

1. Monitoring Wells (Natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled (Semi-annually) ☒ Good condition ☒ All required wells located ☒ Needs O&M ☐ N/A

Remarks: Repaint well identification markings, replace illegible or missing warning signs, replace missing or nonfunctioning padlocks, sample wells in accordance with approved O&M Plan.

X. OTHER REMEDIES

If there are remedies applied at the site that are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Based on the data review, the Site inspection, and the interviews, it appears that the remedy selected in the Record of Decision (ROD) is functioning as intended, however, not all recommendations identified during the previous review have been implemented. Remedy components defined in the ROD are complete except for ongoing natural flushing of the shallow groundwater. As a result of the statistical analysis performed during the current review period, it was found that there are no wells that show statistically significant increases in monitored parameters where exceedances of action levels are found. In addition, with the exception of wells GW-28 and GW-30, no volatile organic compounds have been detected above action levels since 2006 in the remainder of Site wells. The metals beryllium, lead, and nickel are more widespread in Site wells; however, there are a number of wells (GW-7, GW-21, GW-25, GW-33, GW-35) where no exceedances above action levels have been found since 2006.

B. Adequacy of O&M

Physical site maintenance appeared to be adequate at the time of the site investigation on 2 March 2016.

C. Early Indicators of Potential Remedy Failure

None identified during the site inspection.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Opportunities exist to reduce costs of monitoring at the Site through reduction in the frequency of sampling for wells where volatile organic compounds and/or metals have not historically been detected above action levels. In wells where sampling has ceased, and with EPA's consensus, plugging and abandonment of select monitoring wells may reduce costs in maintaining access to the wells (i.e. mowing, less subcontractor time on Site).

INSPECTION TEAM ROSTER

Name	Organization	Title
RAJI JOSIAM	USEPA - R6	RPM
LAM TRAN	TCEQ	PM
April Ballweg	EA Engineering	PM

APPENDIX I

SITE INSPECTION PHOTOGRAPHS

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Photograph No. 1 Site: Sikes Disposal Pits
Description: Main entrance to Site.
Date: 3/2/2016 Direction: North

Photograph No. 2 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-18; heavy sediment buildup observed within fenced area and at gate assumed to be the result of flooding in the area.
Date: 3/2/2016 Direction: Northeast

Photograph No. 3 Site: Sikes Disposal Pits
Description: Signage for GW-18; phone numbers illegible.
Date: 3/2/2016 Direction: Northeast

Photograph No. 4 Site: Sikes Disposal Pits
Description: Close up of GW-18 well casing; heavy rust at edge and on hinges; however still functional; concrete monitoring pad covered with sediment buildup and vegetation.
Date: 3/2/2016 Direction: Down

Photograph No. 5 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-23; small amount of barbed wire dislocated from posts observed during visit.
Date: 3/2/2016 Direction: South

Photograph No. 6 Site: Sikes Disposal Pits
Description: Sign on GW-23 fence; yellow warning sign in background to the right.
Date: 3/2/2016 Direction: N/A (front gate)

Photograph No. 7 Site: Sikes Disposal Pits
Description: Overview of deep monitoring well GW-07 with signs.
Date: 3/2/2016 Direction: South

Photograph No. 8 Site: Sikes Disposal Pits
Description: Opened well casing for GW-07.
Date: 3/2/2016 Direction: Down

Photograph No. 9 Site: Sikes Disposal Pits
Description: Overview of deep monitoring well GW-21.
Date: 3/2/2016 Direction: West

Photograph No. 10 Site: Sikes Disposal Pits
Description: Opened well casing for GW-21.
Date: 3/2/2016 Direction: Down

Photograph No. 11 Site: Sikes Disposal Pits
Description: Overview of shallow monitoring well GW-27.
Date: 3/2/2016 Direction: West

Photograph No. 12 Site: Sikes Disposal Pits
Description: Opened well casing at GW-27.
Date: 3/2/2016 Direction: Down

Photograph No. 13 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-34; missing warning sign; indications of recreational activity observed during site visit (note lawn chair by fence).
Date: 3/2/2016 Direction: North

Photograph No. 14 Site: Sikes Disposal Pits
Description: Close up of GW-34; severe rusting of well casing observed, however, functional.
Date: 3/2/2016 Direction: Down

Photograph No. 15 Site: Sikes Disposal Pits
Description: Vicinity near shallow monitoring well GW-34. Camper trailer observed in the distance behind pine trees.
Date: 3/2/2016 Direction: Southwest

Photograph No. 16 Site: Sikes Disposal Pits
Description: Vicinity near shallow monitoring well GW-34; observed multiple trash disposal drums during site visit; appears to be a picnic area for Down South Offroad.
Date: 3/2/2016 Direction: East

Photograph No. 17 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-35; identification not legible due to heavy rust.
Date: 3/2/2016 Direction: North

Photograph No. 18 Site: Sikes Disposal Pits
Description: Open well casing for GW-35; water observed inside of well casing may be the result of flooding conditions in the area but reason not determined.
Date: 3/2/2016 Direction: Down

Photograph No. 19 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-32; some sediment buildup observed.
Date: 3/2/2016 Direction: West

Photograph No. 20 Site: Sikes Disposal Pits
Description: GW-32; identification fading and well casing rusting however functional.
Date: 3/2/2016 Direction: West

Photograph No. 21 Site: Sikes Disposal Pits
Description: Shallow well GW-32; rusted hinge observed however functional.
Date: 3/2/2016 Direction: Down

Photograph No. 22 Site: Sikes Disposal Pits
Description: Overview of deep monitoring well GW-33.
Date: 3/2/2016 Direction: West

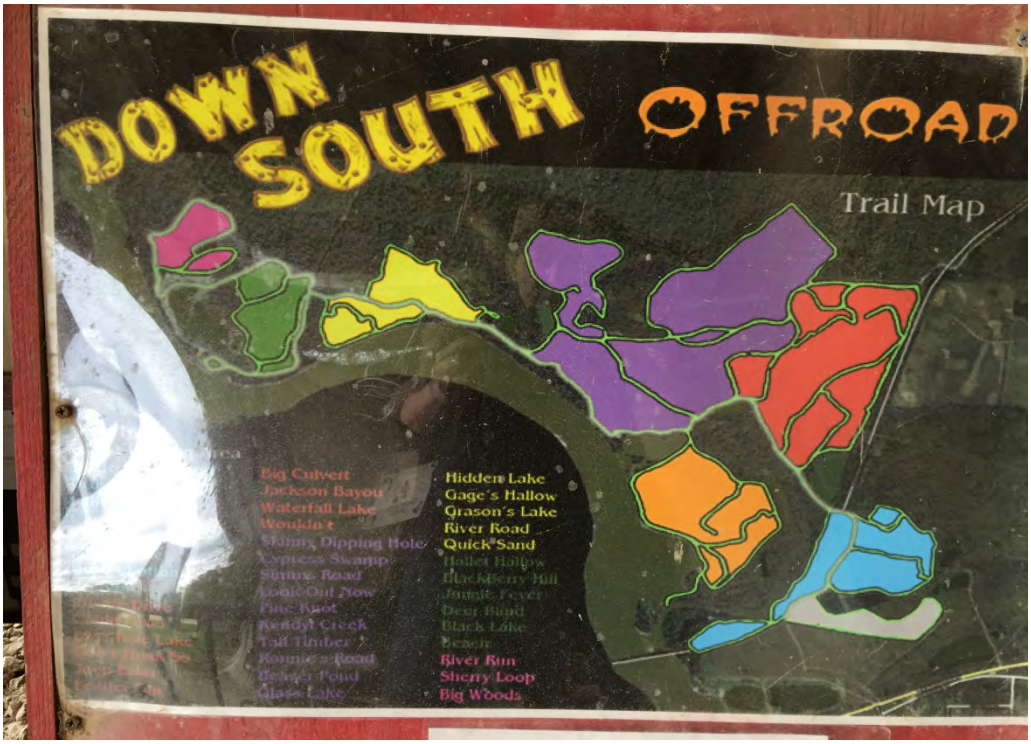
Photograph No. 23 Site: Sikes Disposal Pits
Description: GW-33 area with some buildup of soil on the concrete.
Date: 3/2/2016 Direction: Southwest

Photograph No. 24 Site: Sikes Disposal Pits
Description: Deep monitoring well GW-33 with well casing lid removed.
Date: 3/2/2016 Direction: Down

Photograph No. 25 Site: Sikes Disposal Pits
Description: View of Site access roads in good condition.
Date: 3/2/2016 Direction: South

Photograph No. 26 Site: Sikes Disposal Pits
Description: Alternate view of Site access roads.
Date: 3/2/2016 Direction: East

Photograph No. 27 Site: Sikes Disposal Pits
Description: Business at the northern end of the Site, Down South Offroad.
Date: 3/2/2016 Direction: East



Photograph No. 28 Site: Sikes Disposal Pits
Description: Down South Offroad trail map.
Date: 3/2/2016 Direction: N/A

Photograph No. 29 Site: Sikes Disposal Pits
Description: Sign for shallow well GW-15 (on left) and deep well GW-31 (on right).
Date: 3/2/2016 Direction: West

Photograph No. 30 Site: Sikes Disposal Pits
Description: GW-15; casing observed to be rusting at edge and hinge; yellow warning sign not observed.
Date: 3/2/2016 Direction: West

Photograph No. 31 Site: Sikes Disposal Pits
Description: Deep monitoring well GW-31; yellow warning sign not observed.
Date: 3/2/2016 Direction: West

Photograph No. 32 Site: Sikes Disposal Pits
Description: GW-31 fence enclosure, fallen tree observed lying on top rail of fence along with dislocation of fencing cross bar.
Date: 3/2/2016 Direction: West

Photograph No. 33 Site: Sikes Disposal Pits
Description: Deep well GW-29 (on left) and shallow well GW-28 (on right).
Date: 3/2/2016 Direction: Northwest

Photograph No. 34 Site: Sikes Disposal Pits
Description: Shallow well GW-28; identification fading.
Date: 3/2/2016 Direction: Down

Photograph No. 35 Site: Sikes Disposal Pits
Description: Deep well GW-29; identification fading; note drum of purge water in background.
Date: 3/2/2016 Direction: South/down

Photograph No. 36 Site: Sikes Disposal Pits
Description: Labeled 55-gallon drum of purge water, small quantity of liquid contained within the drum at time of inspection; informed by TCEQ that disposal occurs annually.
Date: 3/2/2016 Direction: Southeast

Photograph No. 37 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-19.
Date: 3/2/2016 Direction: North

Photograph No. 38 Site: Sikes Disposal Pits
Description: Well casing for GW-19; not locked due to damaged pad lock.
Date: 3/2/2016 Direction: Down

Photograph No. 39 Site: Sikes Disposal Pits
Description: Well GW-19 identification highly visible.
Date: 3/2/2016 Direction: North

Photograph No. 40 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-25 located south of Beaumont Highway and north along Gulf Pump Road/Old Houston Crosby Road.
Date: 3/2/2016 Direction: Southwest

Photograph No. 41 Site: Sikes Disposal Pits
Description: Alternate view of GW-25.
Date: 3/2/2016 Direction: North

Photograph No. 42 Site: Sikes Disposal Pits
Description: Well GW-25 casing opened.
Date: 3/2/2016 Direction: Down

Photograph No. 43 Site: Sikes Disposal Pits
Description: Shallow monitoring well GW-30, located at Love's Marina near surface ponds.
Date: 3/2/2016 Direction: North

Photograph No. 44 Site: Sikes Disposal Pits
Description: Shallow monitoring well, GW-30, well casing.
Date: 3/2/2016 Direction: Down

Photograph No. 45 Site: Sikes Disposal Pits
Description: East pond at Love's Marina.
Date: 3/2/2016 Direction: Southeast

Photograph No. 46 Site: Sikes Disposal Pits
Description: West pond at Love's Marina.
Date: 3/2/2016 Direction: Southwest

Photograph No. 47 Site: Sikes Disposal Pits
Description: Love's Marina office.
Date: 3/2/2016 Direction: North

Photograph No. 48 Site: Sikes Disposal Pits
Description: Activity sign for Love's Marina.
Date: 3/2/2016 Direction: East

Photograph No. 49 Site: Sikes Disposal Pits
Description: Based on historical document review, wells S1-116 and INT-116 determined to be sentinel wells and part of the French Limited Superfund Site monitoring well field; Thomas Honey Bees beehive structures no longer staged in the vicinity.
Date: 3/2/2016 Direction: North

Photograph No. 50 Site: Sikes Disposal Pits
Description: Based on historical document review, Well-A identified during the previous five-year review determined to be GW-5 and part of the French Limited Superfund Site well field.
Date: 3/2/2016 Direction: Down

APPENDIX J

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENT SUMMARY

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The purpose of this appendix is to review the applicable or relevant and appropriate requirements (ARAR) set for the Sikes Disposal Pits Superfund Site (Site) and to review Federal, State, or local regulations related to public health or the environment and promulgated subsequent to the Record of Decision (ROD) for changes in standards. For any changes in standards identified, the changes are evaluated to assess the appropriateness of the changed regulations on the actions to ensure protectiveness.

Applicable or Relevant and Appropriate Requirements set by the Record of Decision

ARARs and other requirements 'to be considered' (TBC) for this site were identified in the ROD dated 9/18/1986 (EPA 1986). As a part of the Fifth Five-Year Review (FYR) for the Site, an evaluation was performed to identify and evaluate changes in these ARARs to determine whether such changes may affect the protectiveness of the selected remedy.

The ROD identified the following ARARs and TBCs as having an impact on the proposed remedy:

1. Resource Conservation and Recovery Act (RCRA) requirements for the design, construction, operation, and maintenance of hazardous waste facilities within the 100-year floodplain, as regulated under 40 *Code of Federal Regulations* (CFR) 264 Subpart B.
2. RCRA requirements for the characterization of hazardous wastes under 40 CFR 261, and RCRA requirements for manifesting and offsite transportation of hazardous wastes, as regulated under 40 CFR 262 and 40 CFR 263.
3. RCRA requirements applicable to groundwater protection, as regulated under 40 CFR 264 Subpart F, which state the concentrations of hazardous substances allowable in groundwater.
4. RCRA requirements for the construction of hazardous waste landfills, as regulated under 40 CFR 264 Subpart N.
5. RCRA requirements for operators of hazardous waste incinerators, as regulated under 40 CFR 264 Subpart O.
6. Ambient Water Quality Criteria under 40 CFR 131, and the National Primary Drinking Water Standards, expressed as Maximum Contaminant Levels (MCL) in 40 CFR 141, established under the Safe Drinking Water Act (SWDA).
7. Technical and substantive requirements of the National Pollutant Discharge Elimination System (NPDES), established under the Clean Water Act (CWA) and regulated by 40 CFR 122 and 125.
8. Occupational Safety and Health Act (OSHA) requirements for the protection of workers at hazardous waste sites, as regulated under 29 CFR 1910.
9. Federal Standards for Toxic Pollutant Effluent, as regulated under 40 CFR 129.
10. Substantive and technical requirements for the emissions of primary air pollutants during remedial actions involving waste excavation and incineration, as regulated under the Clean Air Act (CAA) and the National Ambient Air Quality Standards (NAAQS).
11. Department of Transportation (DOT) requirements governing the transportation of hazardous materials, as regulated under 49 CFR 171–177.
12. Requirements of the Texas Surface Water Quality Criteria for the protection of designated uses of surface water bodies in the State of Texas.
13. Texas Air Control Board regulations governing the emissions of pollutants from point sources.
14. Requirements of the Texas Solid Waste Act governing the transportation and disposal of wastes.
15. Requirements of the Executive Order on Floodplain Management, Executive Order No. 11988, to minimize impacts to floodplains during remedial action.
16. The U.S Environmental Protection Agency's (EPA) Groundwater Protection Strategy.

Standard, Requirement, Criteria, or Limitation	Citation	Description	Media	Status
RCRA Landfill Requirements	40 CFR 264 Subpart B	Requirements for the design, construction, operation, and maintenance of hazardous waste facilities within the 100-year floodplain	Hazardous Waste	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
RCRA Hazardous Waste Characterization	40 CFR 261	Requirements for the characterization of hazardous wastes	Hazardous Waste	No changes have been made which would affect the protectiveness of the remedy.
RCRA Manifest and Transportation	40 CFR 262 and 263	Requirements for manifesting and offsite transportation of hazardous wastes	Hazardous Waste	No changes have been made which would affect the protectiveness of the remedy.
RCRA Groundwater Protection	40 CFR 264 Subpart F	Requirements applicable to groundwater protection	Hazardous Waste	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
RCRA Landfill Requirements	40 CFR 264 Subpart N	Requirements for the construction of hazardous waste landfills	Hazardous Waste	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
RCRA Incinerators	40 CFR 264 Subpart O	Requirements for operators of hazardous waste incinerators	Hazardous Waste	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
Ambient Water Quality Criteria	40 CFR 131	Defines the water quality goals of a water body, by designating the use or uses to be made of the water and by setting criteria that protect the designated uses.	Surface Water	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
National Primary Drinking Water Standards, expressed as MCLs	40 CFR 141	Establishes the allowable levels of contaminants in groundwater.	Groundwater	No changes have been made which would affect the protectiveness of the remedy
NPDES, established under the CWA	40 CFR 122 and 125	Technical and substantive requirements of this act must be adhered to during remediation activities.	Surface Water	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
OSHA	29 CFR 1910	Requirements for the protection of workers at hazardous waste sites	Not Applicable	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.

Standard, Requirement, Criteria, or Limitation	Citation	Description	Media	Status
Federal Standards for Toxic Pollutant Effluent	40 CFR 129	Requirements for owners or operators of specified facilities discharging into navigable waters.	Surface Water	No changes have been made which would affect the protectiveness of the remedy
CAA and the NAAQS	40 CFR 50	Ambient air quality to protect public health and the environment.	Air	The applicable activity is no longer occurring, however no changes have been made which would affect the protectiveness of the remedy.
DOT	49 CFR 171–177	Requirements governing the transportation of hazardous materials.	Hazardous Waste	No changes have been made which would affect the protectiveness of the remedy
Requirements of the Texas Surface Water Quality Criteria for the protection of designated uses of surface water bodies in the State of Texas	30 TAC 307	Requirements for discharges to surface water.	Surface Water	No changes have been made which would affect the protectiveness of the remedy.
Texas Air Control Board Regulations	30 TAC 101	Regulations governing the emissions of pollutants from point sources.	Air	The applicable activity is no longer occurring; however, no changes have been made which would affect the protectiveness of the remedy.
Texas Solid Waste Act Regulations	30 TAC 335	Requirements governing the transportation and disposal of wastes.	Solid Waste	No changes have been made which would affect the protectiveness of the remedy.
Floodplain Management	Executive Order No. 11988	Requirements to minimize impacts to floodplains during remedial action.	Surface Water	The applicable activity has been completed; however, no changes have been made which would affect the protectiveness of the remedy.
EPA Groundwater Protection Strategy	NA	To be considered for protection of groundwater.	Groundwater	No changes have been made which would affect the protectiveness of the remedy.

Assessment of Changes in Standards

The remedial action at the Site has been completed, and the current operations involve only operations and maintenance (O&M) activities related to ongoing groundwater and surface water sampling. No hazardous waste treatment or disposal facilities remain at the Site. Therefore, the only ARARs that still apply to the remedy are those related to the contaminated groundwater, O&M activities, and the Texas Surface Water Quality Criteria.

These ARARs include the RCRA requirements to characterize wastes at 40 CFR 261, DOT requirements for the transportation of hazardous materials at 49 CFR 171–177, RCRA requirements for allowable limits of contaminants in groundwater at 40 CFR 264 Subpart F, the Ambient Water Quality Criteria at 40 CFR 131, the MCLs at 40 CFR 141, OSHA regulations at 29 CFR 1910, and the Texas Surface Water Quality Criteria. Also, the EPA's Groundwater Protection Strategy would still apply, but because it is not a regulation or law, it is a TBC requirement for the remedy.

The RCRA requirements for the characterization of hazardous wastes and the DOT requirements for the transportation of hazardous materials apply to purge water generated during groundwater sampling activities. Since the start of O&M, based on available documentation, no water from sampling activities has been characterized as hazardous, and no significant applicable changes have been made to these regulations that affect the remedy's protectiveness. The analytical testing requirements and discharge criteria for purge water are not contained in the Field Sampling Plan (FSP) (ECS 2013) or O&M Plan (Shaw 2012). According to the FSP, purge water generated during sampling events is to "be collected in 55-gallon drums for subsequent testing and disposal" (ECS 2013). Testing requirements are not specified.

The OSHA regulations in 29 CFR 1910 are addressed through a site-specific health and safety plan for the O&M activities at the site. This plan should be updated regularly to reflect any new changes to these regulations.

The RCRA requirements for allowable levels of contaminants in groundwater and the MCLs still apply to the contaminated groundwater. Since the ROD was signed in 1986, MCLs have been promulgated or revised for many of the Site groundwater contaminants. The current MCLs, along with the ROD-specified human health criteria, are provided in Table 1. As shown in Table 1, the current MCL is lower than the ROD-specified human health criteria for cadmium, lead, thallium, benzene, chlorobenzene, 1,2-dichloroethane, ethylbenzene, toluene, 1,1,2-trichloroethane, trichloroethene, and vinyl chloride. The ROD designates the MCLs as ARARs for the Site, and the MCLs were not waived in the ROD. The 2012 O&M report (Shaw 2012b) states that action levels for contaminants of concern have been updated to reflect the lower value between the MCLs or ROD-specified human health criteria (HHC). However, a decision document has not been created to document these changes. An assessment of the MCLs, the HHCs and action levels should be conducted and a decision document should be created as appropriate.

The Texas Surface Water Quality Criteria are now called the Texas Surface Water Quality Standards. These regulations would only apply if contaminated groundwater is discharging into Jackson Bayou, the San Jacinto River, or other surface water bodies. These standards are regulated in 30 *Texas Administrative Code* (TAC) 307, and the regulations are updated regularly. These regulations were last updated in 2014. The Texas Commission on Environmental Quality (TCEQ) has also issued guidance on the calculation of surface water protective concentration levels (PCL) where no surface water quality standard has been promulgated. The guidance document, *Determining PCLs for Surface Water and*

Sediment (TCEQ 2007), would be a TBC for the Site when determining surface water quality criteria for contaminants in surface water where a standard is not contained in 30 TAC 307.

Impact of Changes in Standards

The standards review determined that the MCLs for several Site groundwater contaminants had not changed since the Fourth Five Year Review. In accordance with the ROD, the lower of the MCL or ROD-specified human health criteria should be used for purposes of determining when the groundwater at the Site has achieved the remedial objective of protection of human health and use of the groundwater onsite can be allowed.

References

Environmental Chemistry Services (ECS). 2013. *Field Sampling Plan for Operations and Maintenance Activities, Sikes Disposal Pits Federal Superfund Site, Crosby, Harris County, Texas*. Version 3.0. 6/21.

Shaw Environmental, Inc. (Shaw). 2012. *Operations and Maintenance Plan, Sikes Disposal Pits Superfund Site, Crosby, Texas, Site Number SUP034*. 10/2.

Texas Commission on Environmental Quality (TCEQ). 2007. *Determining PCLs for Surface Water and Sediment.* TCEQ Regulatory Guidance RG-366/TRRP-24. 12/2007.

U.S. Environmental Protection Agency (EPA). 1986. *Record of Decision, Remedial Alternatives Selection.* 9/18.

TABLE 1

ROD-Specified 10^{-5} Human Health Criteria and Current MCLs for Groundwater Contaminants
Sikes Disposal Pits Superfund Site Crosby, Harris County, Texas

Contaminant[a]	ROD-Specified 10^{-5} Human Health Criteria (µg/L)	Current MCL (µg/L)	Year Current MCL Was Promulgated
Berylium	**0.037**	4	1994
Cadmium	10	**5**	1992
Chromium (total)	**50**	100	1992
Lead	50	**15**	1991
Mercury	**0.14**	2	1992
Nickel	**13.4**	Not Available	Not Available
Thallium	13	**2**	1994
Methyl methacrylate[b]	**34,000**	Not Available	Not Available
Styrene[c]	**100**	**100**	1992
Benzene	6.6	**5**	1989
Chlorobenzene	488	**100**	1989
Chloroform	**1.9**	80[d]	2002
1,2-Dichloroethane	9.4	**5**	1989
Trans-1,2-dichlorpropene	**87**	Not Available	Not Available
Ethylbenzene	1,400	**700**	1992
1,1,2,2-Tetrachloroethane	**1.7**	Not Available	Not Available
Toluene	14,300	**1,000**	1992
1,1,2-Trichloroethane	6	**5**	1994
Trichloroethene/ Trichloroethylene	23	**5**	1989
Vinyl Chloride	20	**2**	1989

NOTES:
The groundwater criteria that currently apply (the lower of the human health criteria or the MCL) are bolded and shaded in gray.
µg/L – micrograms per liter ROD – Record of Decision
MCL – Maximum Contaminant Level

[a]Only contaminants that are monitored for are listed.

[b]Methyl methacrylate was included in the O&M Plan in 6/001, but was not initially listed in the ROD.

[c]Styrene was included in the O&M Plan in 12/2000, but was not initially listed in the ROD.

[d]MCL for chloroform is expressed as total trihalomethanes, which also includes bromodichloromethane,